TECHNOLOGY DEPT.

FLIGHT

MAGAZINE

JUNE 1958
One Dollar

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JUN 19 1958
DETROIT Mich.

Fairchild F-27 Friendship

NINTH ANNUAL LOCAL AIR SERVICE ISSUE

Local Service Airlines:

select a **COLLINS SYSTEM**

for the **F27** *Friendship*

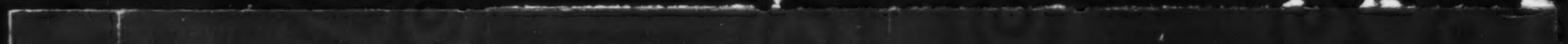
Both Fairchild and Fokker are installing Collins latest electronic systems on the new F-27. This advanced equipment is also on order for the jet and other turbo-jet fleets. The system described on the chart below is recommended for those operators who want the very finest. This selective group includes Collins Integrated Flight System and automatic pilot, ADF, gyro compass, PA and interphone amplifiers, and the highest quality transmitters and receivers for communication and navigation. HF transceivers also available. Alternate Collins equipment groupings can be selected as requirements dictate.

COLLINS

F-27 ELECTRONIC SERVICES AND EQUIPMENT		TYPE NUMBER	WEIGHT
COMM	VHF Receiver, 880 crystal-controlled channels	51X-2	10.5
	VHF Transmitter, 680 crystal-controlled channels, 25 watts	17L-7	14.0
STANDBY COMM	VHF Transmitter, 680 crystal-controlled channels	17L-7	14.0
NAV I	VOR/LOC Receiver	51X-2	10.5
	Omni-Converter, Servo Amp, OBI	344B-1	13.0
	RMI (dual pointer—ADF and 344B-1)	332C-1	2.0
NAV II	VOR/LOC Receiver	51X-2	10.5
	Omni-Converter, Servo	344A-1	9.0
	Course Selector Indicator	331H-1	3.2
ADF	Automatic Direction Finder (includes antenna, receiver, control)	DF-201	30.4
ILS	Glideslope Receiver, 10 channels	51V-3	6.4
	Marker Beacon Receiver, 3-light	51Z-2	4.9
COMPASS	Gyro Compass including gyro, flux detector, amplifier and slave indicator	MC-102	14.3
AUTOPILOT	AUTOMATIC PILOT including FLIGHT DIRECTOR, controls, IFS instruments, servo controls, vertical gyro, computer and computer amplifier	AP-101 FD-104	130.0
PA SYSTEM	Passenger Address Amplifier	346D-1	9.6
INTERPHONE	Interphone Amplifier	346A-1	6.0
		TOTAL WEIGHT	299.4

BIG * BOLD * BEAUTIFUL

Cessna 175



COMPARISO

SO EASY TO FLY

STEP UP TO A 175

To the many owners of low-cost, slow-performing airplanes who dream of flying faster, climbing higher with greater pay loads . . . and still stay in the low price field . . . THE CESSNA 175 IS YOUR ANSWER!

To the non-airplane-owners who desire to learn in and own a speedy, powerful airplane that is extremely easy to fly, economical to operate and maintain, safe and dependable . . . THE CESSNA 175 IS YOUR ANSWER!

See or call your Cessna Dealer soon—you'll find him listed in the yellow pages of the telephone directory—take a demonstration ride in America's newest business airplane! Then you'll know why the Cessna 175 is an easy step-up into power, performance and prestige never before thought possible in the low-price field!

Be sure to ask your dealer about the many benefits of Cessna Lease Plans . . . the easy, low-cost way to fly a Cessna 175!

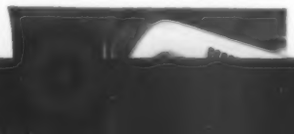
NEVER BE

THE MOST-EASY-TO-READ, EASY-TO-USE, fu
panel ever conceived for styling, comfort,
(Nothing has been spared if it could add to t
All flight instruments are clustered directly i
instant readability. All radio equipment is lo
center line, permitting tuning and channel s
eye attention from direction of flight. Electric
along the top center for greater convenience.
fully positioned within finger-tip reach of the
designed map compartment is readily accessibl
attractive, fabric-covered panel top deck eff
glare. All these features, plus many more, bri
beauty never before realized in an airplane
reason why the Cessna 175 is your very best b

CESSNA PARA-LIFT FLAPS . . . THE LARGEST IN THE INDUSTRY! Exclusive Para-Lift flaps are available only on Cessna airplanes. These fully adjustable, 4-positioned flaps reduce landing speed and distance . . . permit the 175 to descend twice as slowly as man in a fully opened parachute. More than 3000 square inches of flap area enables you to fly in and out of small fields, clearing tall obstacles seconds after take-off.

TWO, EXTRA LARGE, YARD-WIDE CABIN DOORS swing wide to permit easy boarding of passengers or cargo. Adjustable front seats allow pilot to enter first or last, ready for take-off. Removable rear seat and built-in tie-down fittings convert the Cessna 175 from passenger to cargo carrier within minutes. Automatic door stops keep

SPACIOUS REA
prised at the
rich, "living-ro
here is an abu
and leg-room
experience. Ful
the maximum
short trips.

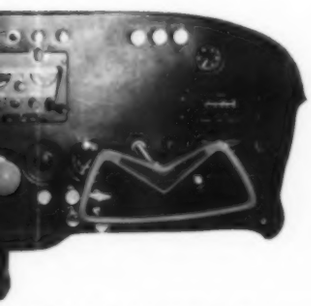


INSIDE FUEL DRAIN CONTROL, handily

ON INVITED

CESSNA 175 FEATURES

BEFORE SO MUCH FOR THE "RIGHT" PRICE



TO-USE, fully-integrated instrument
comfort, convenience and safety.
ld add to the pilot's ease of mind.)
d directly in front of the pilot for
ment is located high on the panel
channel selection without diverting
ght. Electrical switches are grouped
nvenience. Engine controls are care-
ach of the throttle. The big, smartly
ly accessible for immediate use. The
p deck effectively reduces sunlight
y more, bring you a new functional
n airplane priced so low! Another
very best buy!

MORE THAN EVER . . . SIGHT-SWEEP, ALL-AROUND VISIBILITY! Extra large, full-view, wrap-around windshield curves up and back into the roof line providing the finest forward visibility! Free-blown windshield design, formed completely by air pressure, affords better optical quality, more rigidity, and reduces vibration and sound transmission. Giant-size picture windows for both front and rear seats bring greater flight enjoyment, crystal-clear vision to passengers as well as the pilot. New, improved, all-around window seals, plus a newly designed flush-mounted windshield that sweeps gracefully into the fuselage structure, assure quiet, weather-tight inside comfort and protection. Adjustable, roof-level air intakes on each side of the windshield produce a gentle stream of fresh air to interior whenever desired.

INDIVIDUAL ELECTRIC FUEL AND OIL GAUGES, clustered side by side on the 175's advanced instrument panel, keeps the pilot accurately informed—at a quick glance—of fuel amounts and oil conditions. Cessna's new, improved electric fuel gauges assure correct readings at all normal flight attitudes.

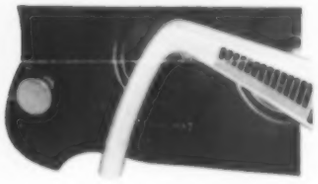
LOW, SLEEK, SPEED FAIRINGS brings dash — speed to the already BIG, BOLD, BEAUTIFUL Cessna 175! Aerodynamically clean styling with designed-in accessibility permits service to both tires and wheels. Tire air pressure can be added without removing fairings. (Speed fairings are optional equipment at extra cost.)

CIOUS REAR SEAT COMFORT! You'll be pleasantly sured at the spacious, extra wide rear seat, designed for , "living-room" comfort and smart functional beauty! For e is an abundance of shoulder-room, hip-room, head-room leg-room that makes flying a relaxing and refreshing erience. Fully adjustable, tapered high seat back, provides maximum in smooth, quiet restfulness during long or rt trips.

AT THE TOUCH OF A FINGER, EACH FRONT SEAT BECOMES INSTANTLY ADJUSTABLE, forward or back, to the exact position you find most relaxing and comfortable. Sliding front seats make rear seat easily accessible even when the front is occupied. Resilient, non-sag springs on a rigid seat frame assure long lasting attractiveness and comfort. Handsome nylon safety belts held in place with seat retainer straps, are strongly anchored to the airframe for utmost safety and protection.

POWERFUL, INDIVIDUALLY TOE-OPERATED, HYDRAULIC BRAKES respond instantly, positively to soft pressures. Gives complete control for quick stops or short, pivotable turns during taxiing and parking on congested fields.

175 SQ. FT., ALL-ALUMINUM, HIGH WING DESIGN suspends Cessna's center of gravity below the center of lift, reduces pitching and rolling . . . provides unsurpassed stability . . . smooths your ride to highest comfort standards! All control surfaces of the wing, as well as the entire airplane, are constructed of strong, corrugated aluminum, counter balanced and suspended on needle bearings for lasting wear.

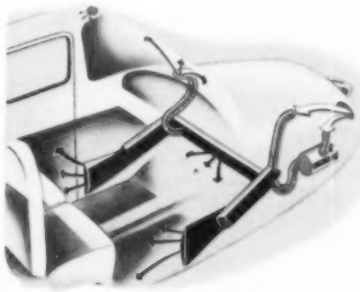


INSIDE FUEL DRAIN CONTROL, handily located on the 175's advanced instrument panel, . . . makes it easy to drain the fuel strainer from within the cabin, saving time and effort.

easy boarding of passengers or cargo. Adjustable front seats allow pilot to enter first or last, ready for take-off. Removable rear seat and built-in tie-down fittings convert the Cessna 175 from passenger to cargo carrier within minutes. Automatic door stops keep doors open when desired. Assist straps and conveniently located steps make boarding a Cessna easy and convenient!

EXTRA BIG, COMPLETELY NEW, STAINLESS STEEL MUFFLER SYSTEM allows you to feel the 175's tremendous power without hearing it! This extra big muffler helps keep engine power at peak performance, yet effectively muffles engine sounds to a new, low level of silent, smooth operation. Increased surface area allows far more efficient heat exchange, resulting in additional cabin heat and reduced engine maintenance costs.

ANOTHER CESSNA EXCLUSIVE . . . WIDE-SPAN, SAFETY SPRING STEEL, LAND-O-MATIC GEAR! Takes the apprehension out of take-offs and landings. Rugged, strong, and completely dependable, Land-O-Matic makes bumpy fields and pastures feel like hard surfaced runways. A "designed-in" low center of gravity lets you handle this airplane with ease never before experienced. Fully steerable nose wheel remains stationary in the air . . . reduces drag and boosts speed. Cessna alone offers you this important safety feature . . . Land-O-Matic gear for drive-up take-offs and drive-in landings.



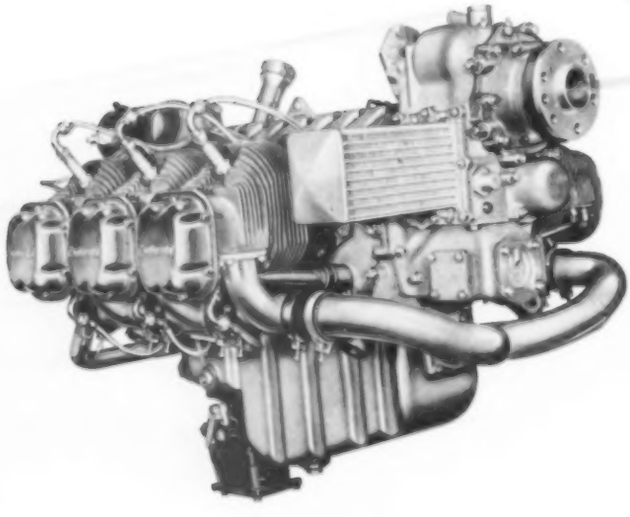
NEW, SIMPLIFIED, SINGLE-UNIT CONTROL allows you to select just the right temperature you desire for the ultimate in year-'round cabin comfort. Six, large waterproof outlets including windshield defroster, provide quiet full-cabin circulation of fresh, cool or warm air. All-weather comfort is always within instant reach when you fly a Cessna 175!

EXCLUSIVE "FLOATING COWL SUSPENSION" . . . another Cessna First! Entire cowling suspension floats in rubber . . . absorbs vibrations and noise . . . for the ultimate in cabin quietness and passenger comfort. "Floating Cowl Suspension" combined with the geared down, slow turning, big 84-inch propeller . . . gives the optimum of quietness to the BIG BOLD BEAUTIFUL 175.

Largest propeller on any low price airplane without sacrificing ground clearance. . . . The 175 propeller thrust line is raised for a 12-inch ground clearance to permit safe operations on all types of fields.

"Floating Cowl Suspension" combined with advanced propeller design and "Power-Geared" performance, are important reasons why the 175 climbs faster, goes faster, is far quieter than any other airplane in the low-price field.

ALL ALUMINUM FUSELAGE GIVES GREATER STRENGTH WITH LESS WEIGHT! Long, low, brilliantly proportioned to flight perfection, Cessna's all-metal construction assures longer life, lower upkeep, lasting beauty, higher efficiency, resistance to weather and exposure . . . PLUS that extra important margin of sturdiness and safety! Year after year, your pride of ownership will grow when you fly an all-metal Cessna 175!



"POWER-GEARED" PERFORMANCE BEYOND COMPARE! This smooth, ultra quiet, 175 h.p., 6-cylinder Continental engine is "POWER-GEARED" to the exact standards of the world's most powerful, low-priced airplane . . . the Cessna 175! The true excitement of "POWER-GEARED" performance can never be fully appreciated until you feel the tremendous rush of Big Power during take-offs, climbs and cruise . . . or whenever vast power means greater safety! Advanced oil cooler combined with improved fuel vaporization and distribution system sets new standards in efficiency, longer engine life, and better fuel economy. Dynafocal engine suspension, cushioned in rubber, melts away vibrations for smooth, quiet performance. Newly designed air intake system—raised high—helps prevent dust and dirt from entering the engine during ground operation. With speeds up to 147 m.p.h., the Cessna 175 provides "POWER LIKE A PASSING GEAR" never before available at such a low price!

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"POWER-GEARED" **with** "FLOA

below the center of lift, reduces pitching and rolling . . . provides unsurpassed stability . . . smooths your ride to highest comfort standards! All control surfaces of the wing, as well as the entire airplane, are constructed of strong, corrugated aluminum, counter balanced and suspended on needle bearings for lasting wear. Creates ease of flying with finger-tip control of all movable surfaces. Cessna's high wing shelters sunglare and weather out, keeps cabin cooler, more comfortable for all-season operation.

ANTI-ICE FUEL VENT is located directly behind the left wing strut, in a sheltered area out of the airstream. Fuel vent design and location resists ice formation within the vent opening . . . helps keep fuel tank pressure equalized for more efficient flow of fuel from tanks to engine . . . means greater assurance of peak performance at all flight altitudes.

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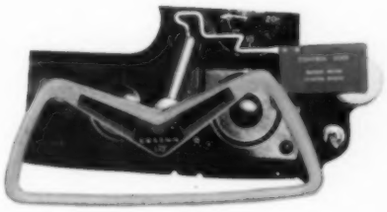


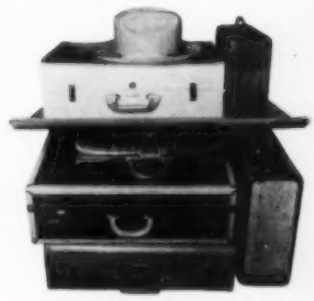
THE CESSNA 175 CONTROL WHEEL is the latest innovation in flight-styling for convenience and safety. Smart, new design gives you unobstructed view of instrument panel and windshield. Side grips are angled in and up for easy, relaxed pressures.

SAFETY CONTROL LOCK of the Cessna 175, conveniently positioned strategically on the instrument panel, provides a simple, positive, method to secure ailerons and elevators against wind damage during tie-down. When in position prevents use of the throttle.

SUPER-SAFE GOODYEAR HYDRAULIC BRAKE SYSTEM with giant size, dual cylinders give the Cessna 175 vast superiority in stopping power . . . assures longer-life, greater dependability and low maintenance . . . allows individual control for cross winds. Parking brake provides positive brake setting during parking and run-ups.

ALL-METAL, JET-TYPE TAIL ASSEMBLY . . . as sleek and streamlined as today's supersonic jets, incorporating outstanding new achievements for unequalled stability and superb control. Sleek, friction-free design reduces drag and increases speed. The fin is high to provide a maximum of directional stability and the stabilizer is full cantilever with no external braces. All control surfaces are long and narrow for maximum efficiency. Rudders and elevators react instantly to the slightest control pressures.

BATTERY is located directly aft of the baggage compartment. Easily removable exterior access door permits quick servicing of battery when necessary . . . eliminates any necessity to go through luggage compartment in order to gain entrance to battery.



120 POUND LUGGAGE SPACE! Big, deep and wide luggage compartment located just behind the rear seat has ample baggage capacity for even the most extended trips. For added convenience this roomy compartment is easily accessible while in flight! In addition, there is a large utility shelf for storing briefcases, hats, cameras, purses, etc. Clothing stays neatly pressed on the Cessna 175 suit hanger attachment.

THE MOST POWERFUL FLOAT PLANE IN ITS PRICE CLASS! The same outstanding performance features that make the Cessna 175 the most powerful land plane in the low-price field, also makes it the most powerful, 4-place float plane in its class. Quick conversion from passenger to utility cargo transport, plus extra long-range fuel capacity makes the 175 especially suitable for remote area operation where float planes prove most profitable. Cessna's exclusive Para-Lift flaps permit short, fast take-offs and slow, pinpoint landings with full pay loads in bodies of water not normally touched by air transportation. High wing design with sight-sweep, full-view visibility affords unobstructed view of terrain and water . . . has ample wing clearance for most piers and pilings. Advanced design vertical stabilizer along with retractable float rudders provide new directional stability in the air and on the water. All-metal anodized and alclad construction resist corrosion in both fresh and salt water. Speedily adaptable to skis or Land-O-Matic gear, the Cessna 175 is truly the most versatile, economical float plane available today in the low-price field.

OATING COWL SUSPENSION"

COMPARISO

*Speed Fai

Compare all types of business transportation. Compare dollars invested against value received. Compare . . . and you'll find the *right decision*, the *right answer* is the Cessna Model 175 — America's newest addition to business mobility for power, prestige, and performance in 1958! Here in the BIG, BOLD, BEAUTIFUL 175 you have big airplane stability, comfort, speeds . . . up to 147 m.p.h., economy, safety and design features generally found only in airplanes costing thousands of dollars more.

New, Revolutionary "POWER-GEARED" Engine with "FLOATING COWL SUSPENSION" brings advanced aerodynamic achievements in smoothness and quietness. . . . The only airplane with so much performance at such a low price! A new "sight-sweep," wrap-around windshield that curves up and back into the roof line furnishing the finest forward visibility. A new kind of easy-to-use, easy-to-read instrument panel. Wide-span, spring-steel LAND-O-MATIC gear for easy drive-up take-offs and drive-in landings. Huge PARA-LIFT flaps for effortless, safe operation in and out of small fields. Magnificent 4-place interiors that are genuinely large and stunningly beautiful. And with all this, you have ALL-METAL construction for lasting strength and durability.

The Cessna 175 is more than the biggest product value in transportation history! It offers your business the economical means to expand markets, increase distribution, multiply sales calls, create better customer relations . . . without additional manpower; improve management liaison; enlarge company prestige; raise employee efficiency and morale . . . this and more . . . at surprisingly low travel expenditures and transportation costs!

The BIG, BOLD, BEAUTIFUL Cessna 175 represents the wisest investment your company can make towards greater sales volume, reduced selling costs and increased profits. Priced to give you the biggest POWER BUY in aviation history. Truly THE RIGHT DECISION!

**Luxurious, living-roo
Cessna 175! From th
new sensation of sp
thickly cushioned wit
You witness the soft
notice the high-fash**

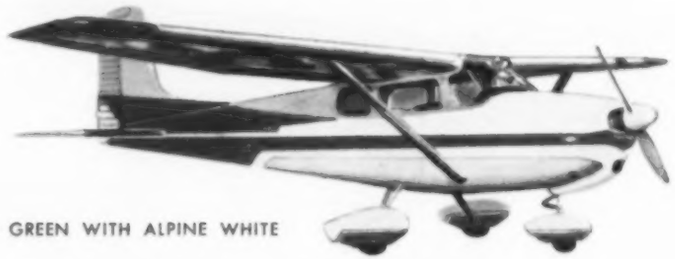
ON INVITED

*Speed Fairings Optional

living-room comfort takes to the air in the BIG, BOLD BEAUTIFUL 5! From the first moment aboard, you are surrounded with a wonderful tion of spaciousness and elegant styling. Adjustable, contoured seats, hioned with foam rubber, invite flight-comfort during the longest trips. ss the soft thickness of lustrous nylon-twist wall-to-wall carpeting. You high-fashion handsomeness of tailored fabrics and the magnificent coordination of colors, textures and weaves. You relax in spaciousness . . . here is leg-room, head-room and ease of entry and exit that makes flying a refre ing experience. Yes, comfort and beauty take new form inside the Cessna 1 Whether you select the Palm Green interior (lower left) or the Dixie Gray con nation (lower right), your Cessna 175 presents a new adventure in air tr luxury!

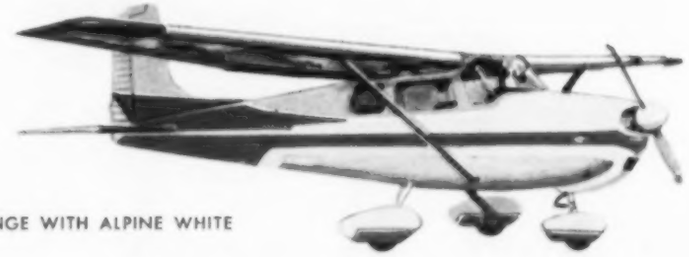
FOUR BEAUTIFUL EXTERIORS

ANGER RED WITH ALPINE WHITE



IGHLAND GREEN WITH ALPINE WHITE

AIROBI BLACK WITH ALPINE WHITE



IO ORANGE WITH ALPINE WHITE

Your choice of four thrilling exterior color combinations with dynamic "Power-In-Motion" flight design. Cessna's all-new 175 radiates "power at a single glance" . . . futuristic styling that retains its modern concept in the years ahead! America's distinguished new conveyor of power, performance, prestige and styling never before achieved in the low-priced field . . . THE BIG, BOLD, BEAUTIFUL CESSNA 175 for 1958!

SPECIFICATIONS

	Landplane	Seaplane
ENGINE: Continental GO-300A (6 cyl.)—h.p.	175	175
PROPELLER: McCauley fixed pitch metal	FC 8467	FC 8455
SPEED: Maximum @ Sea Level—m.p.h.	147	120
Maximum Recommended Cruise @ 10,000 Feet—m.p.h. Landplane 70% Power, Seaplane* 60% Power	139	113
RANGE: Maximum Recommended Cruise, No Reserve		
Miles	595	560
Hours	4.3	4.9
True Airspeed—m.p.h.	139	113
Maximum Range, 39% Power @ 10,000 Feet, No Reserve		
Miles	720	605
Hours	7.0	7.0
True Airspeed—m.p.h.	102	86

	Landplane	Seaplane
Rate of Climb (Sea Level) Ft./Min.	850	855
Service Ceiling—Ft.	15,900	15,250
Gross Weight—Lbs.	2,350	2,350
Empty Weight—Lbs.	1,312	1,524
Luggage Compartment Capacity—Lbs.	120	120
Fuel Capacity—Gallons (Range Based on 43 Gallons Usable)	52	52
Span—Ft.	36'	36'
Length—Ft., In.	25'	25' 2"
Height—Ft., In.	8' 6"	12' 3"
Wing Area—Sq. Ft.	175	175
Wing Loading—Lbs./sq. ft.	13.4	13.4
Power Loading—Lbs./h.p.	13.4	13.4

*Limited by maximum allowable RPM.

STANDARD EQUIPMENT

Airspeed Indicator
Altimeter (Standard)
Compass
Stall Warning Indicator
Shock-Mounted Instrument Panel
Hydraulic, Toe-Operated Brakes
Steerable Nose Wheel
"Para-Lift" Wing Flaps
Parking Brake
Control Lock
Tie-Down Rings
Engine Mufflers (Stainless Steel)
Key-operated Door Lock

Engine Shielding
All-Metal Propeller
Propeller Spinner
Gravity Fuel System
Recording Tachometer
Mixture Control with Safety Lock
Oil Pressure Gauge
Oil Temperature Gauge
Carburetor Heater
Carburetor Air Filter
Electric Fuel Gauges on Instrument Panel
Extra Map Pocket

Dual Magnetos
Generator
12-Volt Battery
Instrument Panel Lights
Dome Light
Navigation Lights
Map Light
Landing Light Wiring & Brackets
Windshield Defroster
4 Position Fuel Selector Valve
Key-Operated Ignition Starter
Generator Light

Oil Radiator
Cigarette Lighter
Map Compartment
Individual Ash Trays
Cabin Heater
Six Cabin Air Vents
Suit Hanger in Cabin
Full Foam Rubber Seat Cushions
Adjustable Seats (Front & Rear)
Attachment for Cargo Rings and Harness
Attachments and Brackets for Sun Visor and Safety Shoulder Harness

SERVICE

The Cessna world-wide dealer organization offers you a chain of Cessna "super-service stations" around the world . . . usually only minutes away . . . for prompt attention in a friendly and competent manner. Your dealer is factory trained and equipped to provide you with expert and economical servicing. His personal interest in your 175 will assure you of unmatched performance and safety. He maintains the world's largest stock of genuine factory service parts and his customer service assistance is the best in the industry. Your Owner's Service Policy gives you free inspection service at any Cessna dealership world-wide.

SEE YOUR CESSNA DEALER SOON! TAKE A DEMONSTRATION RIDE IN THE BIG, BOLD, BEAUTIFUL CESSNA 175

CESSNA AIRCRAFT COMPANY • WICHITA, KANSAS, U. S. A.

NORTH CENTRAL AIRLINES, INC.

CENTRAL AIRLINES Inc.

FRONTIER AIRLINES

BONANZA AIR LINES INC.

WCA
WEST COAST AIRLINES

PIEDMONT Airlines

ALLEGHENY AIRLINES

Lake Central AIRLINES

TRANS-TEXAS Airways

Southern AIRWAYS

PACIFIC AIR LINES

OZARK Air Lines

MOHAWK Airlines
THE ROUTE OF THE AIR CHIEFS

SALUTE

TO THE LOCAL SERVICE CARRIERS

American Airlines salutes the local service carriers of America. By offering service to so many communities—large and small—they have played an important role in providing the United States with the finest, most extensive air transportation system in the world.

AA

AMERICAN AIRLINES
America's Leading Airline

MILESTONES IN AVIATION

Flying to fame in the T-2

The Fokker T-2, renowned in its day as the "Flying Laboratory" for the Liberty engine, carried Lieuts. John Macready and Oakley Kelley to fame on two occasions. The first time was in 1922, when they stayed aloft in the T-2 for 36 hours and 5 minutes, breaking the world endurance record.

Then, in 1923, after two unsuccessful trials, Macready and Kelley piloted the T-2 in the first non-stop flight across the United States. Leaving Long Island at 12:36 PM on May 2, they just managed to get off the ground due to a heavy load of gasoline. Twenty-six hours and 50 minutes later, they landed the T-2 at Rockwell Field, San Diego.

The non-stop flight, made without guidance of beacons or lighted airways at night, showed that skilled pilots, in suitable planes, could traverse the United States in any direction without the need to refuel. The era of true freedom of flight was opened.

● A pioneer in research and development of aviation fuels, Phillips Petroleum Company is, today, a foremost supplier of high octane gasoline for commercial, private and military aircraft. In step with the future, Phillips is a leading producer of *super-performance* jet fuels for the latest designs in turbo-props and jets. And Phillips research continues to lead the way for development of fuels for the aircraft of tomorrow.

Phillips 66

AVIATION DIVISION • PHILLIPS PETROLEUM COMPANY • BARTLESVILLE, OKLAHOMA

AIR Report
Significant Trends and News

NEW FEDERAL AVIATION AGENCY would be created by proposed legislation by Senator Mike Monroney and Rep. Orren Harris to amend Civil Aeronautics Act. It would divorce CAA from Commerce Department, assign safety to CAA with right of appeal to CAB and enable CAA administrator to regulate all airspace for all planes, with special military advisor.

BUSINESS PILOTS are urged by NBAA to participate with airlines in voluntarily placing all flights under IFR positive separation standards above 10,000 ft. along airways regardless of actual weather.

SIGNIFICANT NEW LEAR RADIO-ELECTRONIC DEVELOPMENTS include (1) ADF transducer, weight less than 2 lbs. and applicable to any ADF, which makes possible the use of any non-directional LF transmitter such as a broadcast station as an omni facility; (2) new gonio loop and goniometer resolver transducer as replacement for existing rotating loop antennas for simpler, drag-reducing installation and greater ADF range; (3) new L-5-Life (for Lear integrated flight equipment) combination using same gyros and same mode selector for simpler, less costly autopilot-navigation-attitude indicating installations and smoother, easier-to-fly IFR instrumentation; (4) Fairchild factory installations of L-5-Life installations in F-27 propjets, several customers having already ordered dual L-5 autopilot installations, and (5) complete, nationwide factory servicing of all Lear equipment.

LOCKHEED WILL PRODUCE JETSTARS FOR BUSINESS OPERATORS prior to any substantial military order.

SOUTHWEST AIRMOTIVE IS NOW CESSNA DISTRIBUTOR and service center at Dallas, having bought Aircraft Sales Co. of Fort Worth. Southwest does not intend retailing Cessnas but will wholesale them to dealers. Firm sold Lockheeds, Stinsons and Wacos in 1930's.

MOONEY AIRCRAFT SALES jumped 80% in units and 98% in dollar volume for first 6 months of fiscal 1958 over same 1957 period, deliveries being 59 planes for $718,521 versus 33 for $359,528. . . . **ROUND-WORLD MOONEY MARK 20A FLIGHT** will be attempted solo by George Williams of Mexico City in September.

LEWIS (BUD) MAYTAG, JR., owner of Maytag Aircraft of Colorado Springs, has bought control of Frontier Airlines.

FLIGHT MAGAZINE

JUNE, 1958 VOL. 47, No. 6

THIS MONTH'S COVER and many pages of special editorial material in this issue are devoted for the ninth consecutive year to progress in the perfection of local air service. The Fairchild F-27 propjet on the cover will be delivered to West Coast Airlines this summer, first of the locals to receive delivery of a turbine transport.
(Photo by Fairchild Engine and Airplane Corp. for FLIGHT MAGAZINE.)

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GEORGE E. HADDAWAY, Editor-Publisher: TOM ASHLEY, Managing Editor; FRED N. STONES, JR., Business Manager; LOUISE ROBERTSON, Circulation; E. H. PICKERING, Consultant; P. O. BOX 750 (2700 N. Haskell Ave.), Dallas, Texas — Telephone TAylor 3-6191.

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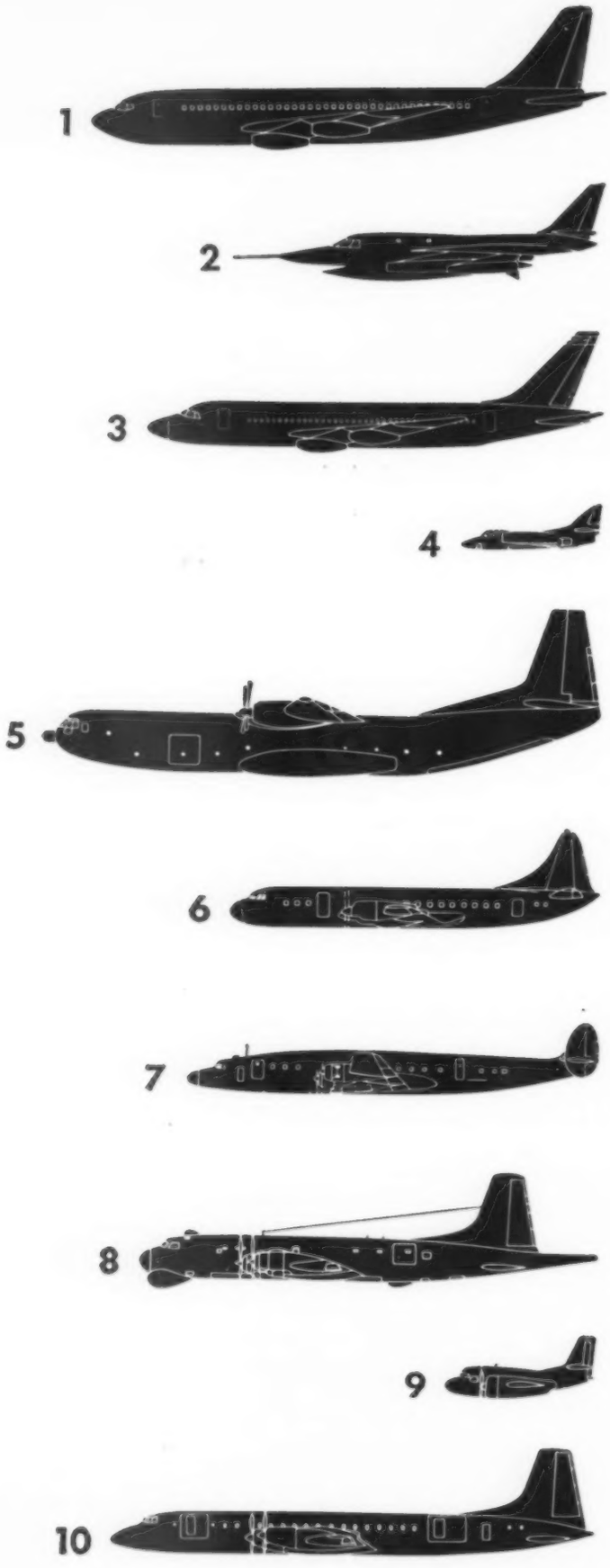

Can you identify them?

Know what they all have in common?

The aircraft shown here form the vanguard of the wondrous new era of commercial and military aviation. Differing in size, design and purpose, these airplanes have one significant feature in common. All are equipped with Bendix Automatic Flight Control Systems. And that should be proof beyond question that Bendix Automatic Flight Control Systems are the best answer to aviation's needs of today—and the future.

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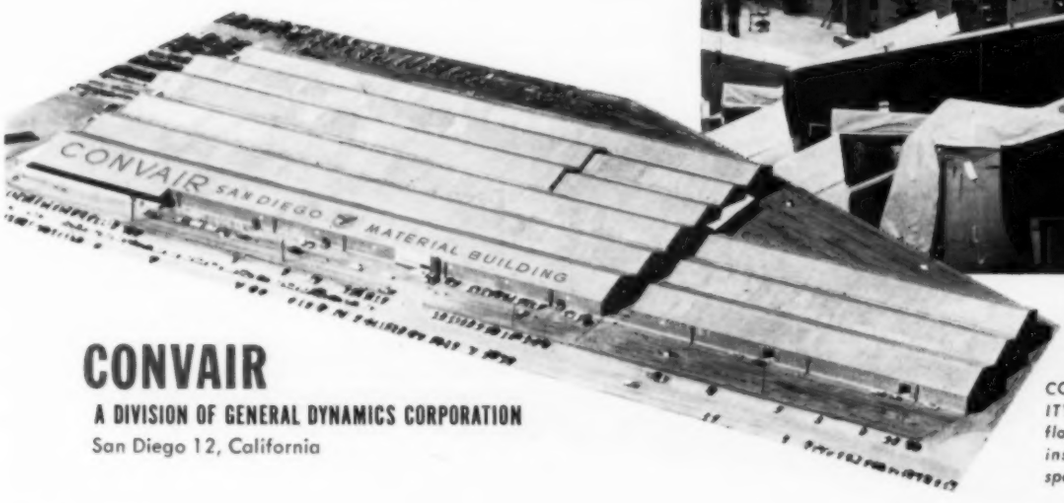

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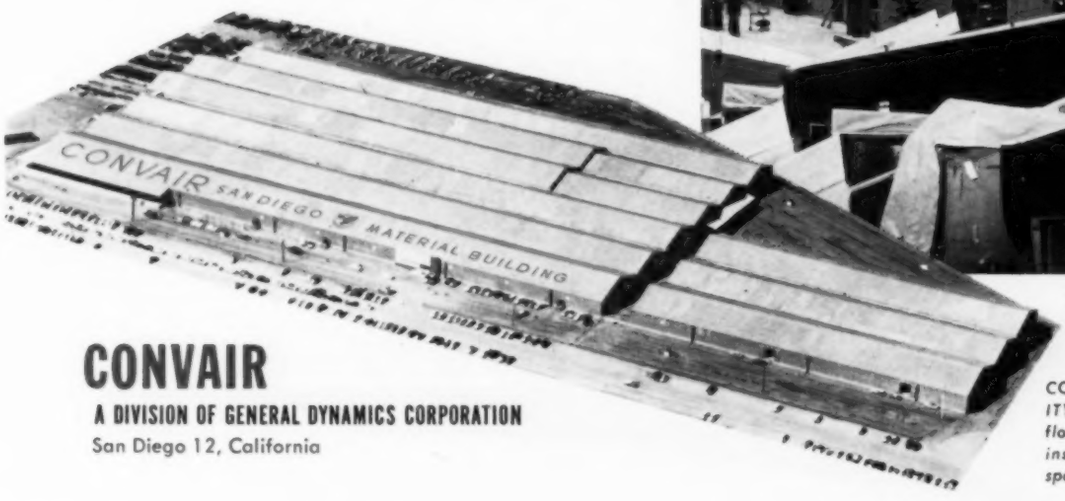

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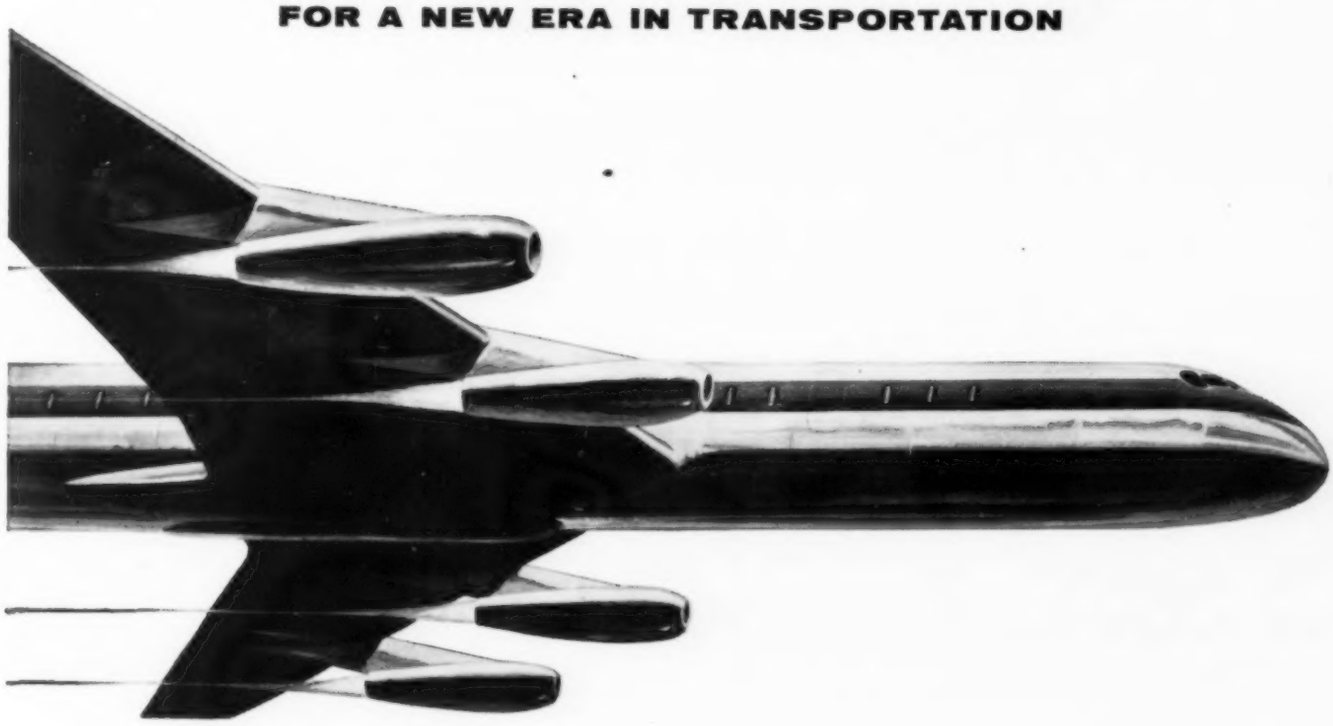

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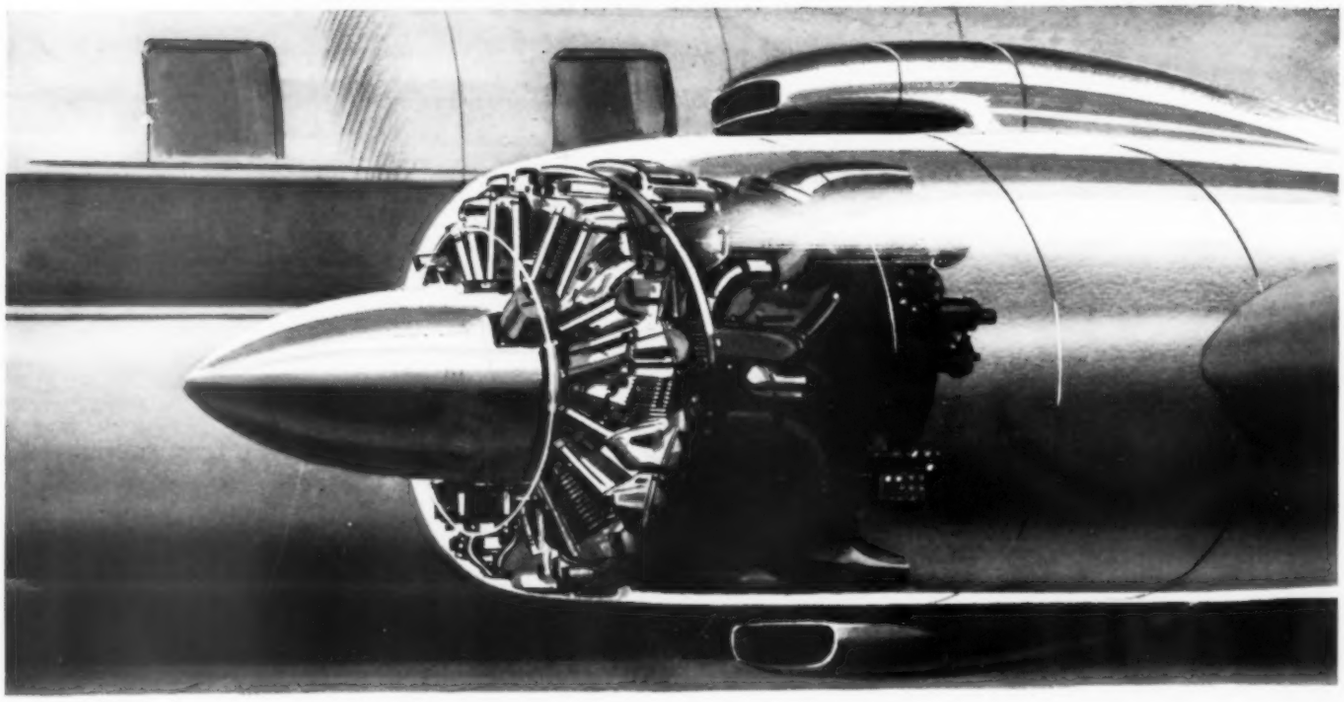

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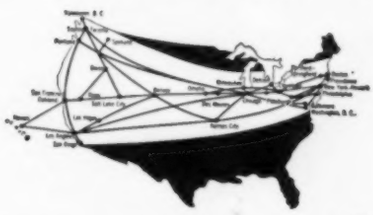
No wonder connecting airlines route so many of their passengers via United. United offers weather-mapping radar on every plane. Luxurious Red Carpet* Service on DC-7s. Exclusive DC-7 Custom Coach flights with hot meals included in the low fares. Convenient schedules along a Main Line route  covering 80 cities coast-to-coast and Hawaii, with over 800 flights each day.

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1932 A QUARTER CENTURY OF LEADERSHIP 1958

Just among ourselves

Opportunity Ahead

IT is with considerable pride we present in this issue the 9th Annual Local Service Airline study undertaken by FLIGHT MAGAZINE. We recommend a thorough reading of the special features and statistical summaries to everyone with any kind or degree of interest in U. S. commercial aviation.

Local air service is now provided to more than 468 American communities, more than half of which would have no air service at all without the local schedules. Were it not for this service several hundred airports would be grown up in weeds or abandoned. Lack of air accessibility to these key communities would seriously cripple the utility of our fleet of U. S. business aircraft. Likewise, trunk airline revenue would be reduced substantially — last year the locals sold over $27 million worth of tickets for the trunks.

Without local airlines, aviation gasoline sales last year would have been 54 million gallons less. Replacement parts and maintenance volumes would be correspondingly less. Even Uncle Sam would have had less tax take had there been no local airline service. The insurance companies would have had less volume and air mail revenues would have been down from the loss of 1,520,182 ton miles of mail carried by the locals in 1957. Were it not for this segment of domestic air transportation we doubt if Fairchild would have undertaken the F-27 turbo-prop transport project now entering the delivery stage.

We could go on and on with this line of thought, detailing the vital importance of these relatively small carriers to the U. S. aviation industry in particular and to the national economy and individual communities in general. What's most important, however, is new and concrete evidence that locals might soon come into a period of profitable operations beacuse of revised Civil Aeronautics Board policies which in turn will open the door to critically-needed investment capital. It is obvious that the present Civil Aeronautics Board is beginning to admit they have treated the locals as unwanted step-children, kept them on a starvation diet through unrealistic mail pay formulas and hamstrung them with impossible operating restrictions. We sincerely believe a new and progressive CAB policy toward local air service is in the making.

This process can be accelerated if everybody in the aviation industry and the communities affected will learn all they can about local service and then join in the push for intelligent Federal policy, not by heaping criticism on the Board and the Administration for past neglect and mistakes but rather by encouraging an immediate re-appraisal of local air service in the United States looking to putting these hardy carriers on a money-making basis. Intelligent Federal policy did it for the trunks years ago. The locals deserve the same traditionally American treatment. Congress made it clear a couple of years ago by ordering permanent certification and last year by the equipment guaranteed-loan legislation. Wrapped up in this fascinating situation is one of the greatest challenges and opportunities U. S. commercial aviation has ever faced.

We submit this edition with the hope it will speed full realization of the opportunity ahead.

Flight Magazine Salutes:

★ ★ ★ **R. W. F. (BOB) SCHMIDT,** manager of the Tucson Airport Authority, for steering the American Association of Airport Executives as its president through its most successful year, culminating a quarter century of progress at its annual convention in Fresno, California, last month, where AAAE elected Henry P. Julliard of Louisville, Kentucky, to succeed the one and only "Typhoon of Tucson."

★ ★ ★ **THE CITY OF FORT WORTH** for working out a practical revenue-bond financing plan for a new $1,500,000 maintenance hangar and general office building to be occupied by Central Airlines on Amon Carter Field, reflecting faith in the future of the local service airline industry which has been plagued for more than a decade with unprofitable operations under restrictive Federal policy.

★ ★ ★ **VETERAN AIRLADY RUTH NICHOLS,** dedicated Quaker, now completing a flying voyage to every nook and cranny of the nation in behalf of the national Nephrosis campaign.

★ ★ ★ **COL. A. B. McMULLEN,** executive director of the National Association of State Aviation Officials, for his statistical summary of U. S. Airports and for his intelligent testimony before the Senate Interstate and Foreign Commerce Committee in behalf of the Federal Airport Act extension. Sole witness testifying against the bill was Louis Rothschild, Under-secretary of Commerce — an all-time low for a Federal agency to stab in the back the very development it is charged by the Congress to foster and uphold.

★ ★ ★ **ALABAMA AVIATION COUNCIL FOR PRIVATE FLYING,** for organizing to consider problems and needs of private flying and to assist its development. Membership will be composed of the presidents of all flying clubs, aero clubs and other local and state flying groups. Hayden Brooks and Harold F. Woods of Birmingham have been asked to head it.

Let's Try Something Simple

WE recall with very little pride of authorship an editorial published in these columns back in November of 1956 calling attention to the fact that jet training flights have no business on or near the Federal Airways, following a fatal collision between a Cessna 170 and an Air Force jet trainer over Midland, Texas, which wiped out a family of five and two Air Force pilots.

The trainer was shooting simulated ILS landing at the Midland air terminal and had pulled up for a go-around with one pilot under the hood and the other riding as check pilot. They smacked into the 170 with tragic results.

It was a jet trainer that hit a United Airlines transport outside Las Vegas in April and a jet trainer that knocked down a Capital Airlines' Viscount over Maryland last month — all with tragic and unnecessary loss of life.

How much blood must be shed until the authorities responsible for this carnage are brought to taw? How many ranting speeches have to be delivered in the halls of Congress before we take the simple, direct and realistic expedient of segregating jet training activities to the millions of acres of already restricted air space off the Federal Airways system?

There is much more to the problem than the segregation of jet training operations. All the wishful thinking for positive control of all air traffic is a waste of time, except for the high altitudes. Our present system of air traffic control simply can't handle the present volume. We have a long time to go before the Airways Modernization Board can come up with the answer to that one. We must live for a while longer on the "see and be seen" basis under VFR conditions — and remember that every one of the recent mid-air collisions and most of the reported near-misses have been during VFR conditions.

We're inclined to agree with William P. (Bill) Lear, who last month recommended to the AMB that immediate steps could be taken to partially alleviate the mid-air collision problem by universally adopting the new high brilliance radioactive paints now on the market and an investigation into the use of high intensity flashing lights somewhere in the neighborhood of a quarter-million candle power that have been developed in Germany. Lear has done some very successful experimentation with the new paints and the lighting which is effective in clear daylight.

We recently interviewed a seasoned corporation pilot who attributes avoidance of a mid-air collision with a jet trainer to the high visibility paint on the trainer which caught his eye in time to negotiate a rapid change in course and avoid sudden death.

The new paints should be mandatory. Aesthetics be damned. This can be done at once and is far more than a temporary expediency. Every airplane should carry a partial paint job on wings, fuselage and tail with the new luminous paints. This paint has to be renewed every six months, but is worth the cost.

Ask any control tower operator and he'll tell you the revolving red beacons are simply no good during daylight hours, even in times of restricted visability. You always see the airplane before you see the beacon during daylight. We're convinced that our electronics people can immediately develop a high candlepower system of lights that can be used as an anti-collision device until we get a common system of cockpit warning devices.

How much longer do we have to wait for those in authority to get down to simple fundamentals? It's a case of straining at gnats and swallowing camels.

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MORE PASSENGERS BOARD CHA'S
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GREATER PROFIT POTENTIAL FOR SHORT-SECTOR HIGH-FREQUENCY ROUTES

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Proved popularity . . . big capacity

Since its introduction to American service in 1955, the Viscount has firmly established itself as the most *preferred* of all modern airliners. Because of its famed smoothness, silence and speed, the jet-prop Viscount has boosted load factors an average of 35% for 27 airlines worldwide. The new Local Service Viscount will comfortably accommodate from 54 to 65 passengers. In either configuration there is ample space for passenger baggage and mail.

Dependable, economical Rolls-Royce power

The Local Service Viscount is powered by four performance-proved Rolls-Royce Dart 506 jet-props. These engines have demonstrated their outstanding ruggedness and reliability under operating conditions similar to those of local service operations. The Dart 506 engines are unsurpassed for economy, ease of maintenance and hours between overhauls. (TCA reports approval for 1800 hours—with current test engines being run to 2000 hours.) They give the Viscount exceptional take-off and climb performance and a cruising speed of 300 mph at 10,000 feet.

FROM THE WORLD LEADER IN JET-

Fast intermediate servicing and terminal turn-around

The Local Service Viscount can be operated on routes of up to five 100-mile sectors—without refueling and with a minimum of ground handling. Provisions are made for fast under-wing pressure refueling at terminal points (overwing fueling points are also provided).

Less ground equipment is needed and valuable time is saved by the Viscount's integral, hydraulically operated stairs. Further savings are assured as the engines rarely require water-methanol at intermediate stops.

The #4 engine can be kept running during intermediate stop-overs—thus assuring ample power for restarting the engines. If longer stop-overs are required, internal restarting is still possible because of increased battery capacity. Brakes on number 1, 2 and 3 engines prevent windmilling of props, permit safe, quick on-and-off loading of passengers on the left side, freight on the right.

Local Service Viscount means Jet Age growth for you and the communities you service!

By cutting flying time almost in half—and by introducing Jet Age service comparable to the best offered by the "trunk" lines—the Viscount will open doors to important *new* business traffic that means accelerated growth. This growth will benefit not only local carriers, but the areas they serve—areas that deserve the opportunities that come with the best and most modern airline service.

Because the Local Service Viscount is tailored for highly economical operations—and because its payload capacity is sufficient to absorb future growth—it is the ideal airliner for local service carriers today *and tomorrow!*

For information, contact: Christopher Clarkson, U.S. representative, 10 Rockefeller Plaza, New York 20, N.Y.

PROP AIRCRAFT...

VICKERS LOCAL SERVICE VISCOUNT

POWERED BY FOUR ROLLS-ROYCE DART ENGINES

VICKERS-ARMSTRONGS (AIRCRAFT) LTD. • WEYBRIDGE, ENGLAND • MEMBER COMPANY OF THE VICKERS GROUP

The other 50 weeks are richer for the two spent abroad.

Their next move is your move...

This is one girl's reaction to a Pan Am advertisement. It has run in a number of publications, including *Life*, *National Geographic* and *Holiday*. You may have seen it.

It is typical of what happens when people see Pan American advertisements. Their desire to travel is stimulated. They want to go. And they do . . . over three quarters of a million people went overseas by Pan Am from the U. S. last year alone.

A sizable number of these people made the first leg of their journey on Uncle Sam's local service carriers. We take this opportunity to thank you and salute your phenomenal growth. The frequency and dependability of local service carriers has helped to broaden the air horizons for all Americans.

Keep up the fine work.

NEW HORIZONS*

Pan Am's 576-page world-wide travel guide (over half a million sold to date) has probably put wings on more dreams than any other book. Send for your copy. Mail $1 to Pan American, Dept. 191, Box 1111, New York 17, N.Y.

*TRADE-MARK, REG. U.S. PAT. OFF.

WORLD'S MOST EXPERIENCED AIRLINE

FAIRCHILD F-27 *Flight Memo*

FAIRCHILD ENGINE AND AIRPLANE CORPORATION • Hagerstown 15, Maryland

SUBJECT: LOCAL LINE LUXURY June, 1958

TO: Millions who fly the nation's local service airlines.

You'll soon be enjoying the many pleasures of jet air travel. They are being brought to you by the newest luxury limousine of the sky lanes--Fairchild's slim, fast, 40-passenger, twin propjetliner.

Neither very hot nor very cold weather has the slightest effect on the cozy, living-room atmosphere of the F-27's passenger cabin. A temperature control system maintains an even flow of delightfully cool air in summer and comfortably warm air in winter. Whether the F-27 is in the air or on the ground, passengers are never uncomfortable.

Fairchild and your local airline have been planning this perfect air comfort for you for some time. Look for the F-27--the one with the distinctive high wing and big oval windows. It's now being delivered, soon will be in service.

These progressive airlines will soon take delivery of the F-27: AREA (Ecuador), AVENSA, Bonanza Air Lines, Linea Aeropostal Venezolana (LAV), Mackey Airlines, Northern Consolidated Airlines, Piedmont Airlines, Quebecair, Pacific Air Lines, West Coast Airlines, Wheeler Airlines, and Wien Alaska Airlines.

First Fairchild F-27 delivered to West Coast Airlines, June 22.

NOW! Continental offers first jet-power travel between Chicago, Kansas City, Denver and Los Angeles

CUSTOM-BUILT FOR CONTINENTAL
BY VICKERS-ARMSTRONGS LTD.
POWERED BY ROLLS-ROYCE

JET POWER VISCOUNT II
WILL HELP INCREASE YOUR LOAD FACTORS!

Continental gratefully acknowledges the major contribution the local service carriers have made in increasing traffic exchange and looks forward to a continuing increase this year. We hope the Jet Power Viscount II will assist in building even greater traffic over your own routes.

CONTINENTAL AIRLINES

FIRST IN THE WEST WITH JET-POWER FLIGHTS

Flying Over West Texas...

...Map your stops at the Humble sign

HUMBLE *Aviation Gasolines and Lubricants are available at these West Texas airports:*

Albany – Taylor Airport
Breckenridge – Stephens County Airport
Coleman – Coleman Municipal Airport
Gorman – Gorman Airport
Graham – Graham Municipal Airport
Junction – Kimble County Airport
Kerrville – Louis Schreiner Airport
Midland – Midland Air Terminal
Monahans – Monahans Municipal Airport
Ozona – Ozona Airport
Sonora – Sonora Municipal Airport
Wink – Wink Municipal Airport

Humble Aviation Engine Oils are noted for the protection they give your airplane's engine. Parts last longer; the engine stays cleaner; rings don't stick; and you get increased time between engine overhauls. Your plane's engine will perform better, last longer when you use Humble Aviation Lubricants.

Make all your flight stops at the Humble sign. Your plane will receive careful, thorough service—the same superior service that your car always gets at your favorite Humble Service Station.

HUMBLE

AVIATION PRODUCTS

HUMBLE OIL & REFINING CO.

Electra

Performance as promised

All Electra Guarantees met—

Proved Short Field Capability

Flight Tests show the Electra landing descent and stopping characteristics will more than meet guarantees. In fact, the Electra is consistently making stops using less than 2,500 feet of runway.

Meets Passenger Comfort Demands

"Belt-Free" Flight—On a typical 400-mile trip, Electra spends only about 15 minutes in climb, descent and taxi...55 minutes in level, comfortable flight.

Over/Under Weather Flexibility—Electra assures passenger comfort by being able to take off and fly at any altitude from 5,000 feet to 25,000 feet with less than 1% variation in speed.

PROVED POWER PACKAGE

Electra's 4 General Motors Allison Prop-Jet Engines will have accumulated a combined total of 350,000 ground and flight test hours before entering airline service this fall...one of the most comprehensive engine-package test programs ever undertaken.

DESIGNED-IN LOW MAINTENANCE

Electra has major components grouped into "man-height" central service areas. Uses many interchangeable units with quick plug-in connections—reducing en route delays, down time and costs.

Flight

or exceeded in Flight Tests

ASSURED LOW COST OPERATION

Realistic Load Factors—Even on "thin traffic routes," Electra's 88-seat capacity offers an opportunity for profit. Assuming a 50% break-even figure, the Electra will need only 44 passengers, contrasted with the 60 or more needed on the turbojet's 120-seat capacity.

Low Cost Power—Electra's efficient prop-jet engines give more horsepower for every fuel dollar.

Low Fuel Consumption—On a typical 300-mile flight Electra can fly at any altitude from 5,000 to 25,000 feet with operating costs varying only 2%.

Complete After Sale Support

Lockheed's new "Electra/Flight" advertising and promotion theme is now appearing in business magazines, soon begins in the pages of national and international mass media.

Electra purchasers get *complete* in-service operational support—including outstanding spare parts service, world-wide field service, ground and flight training support, special introduction teams and other valuable assistance.

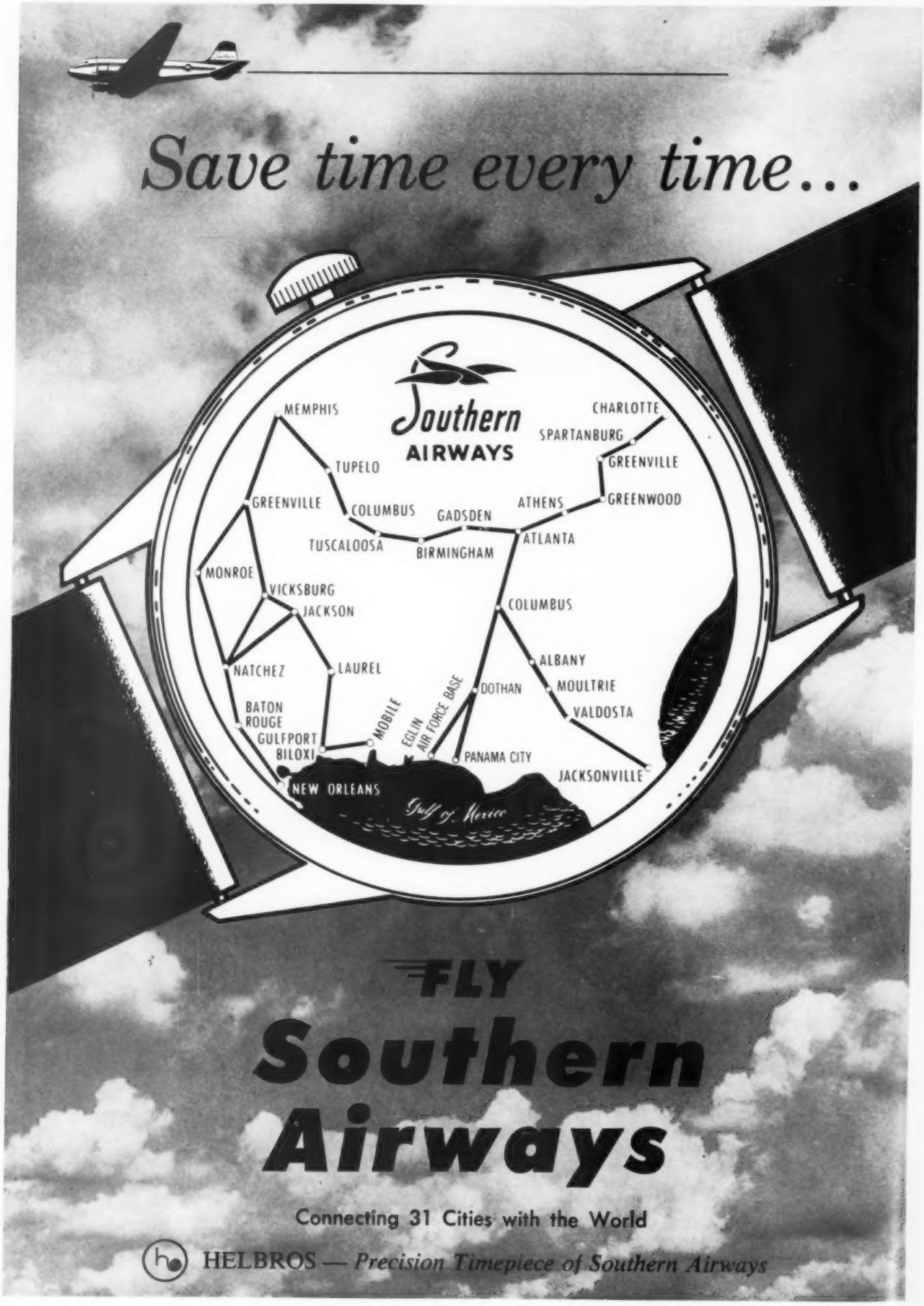
Purchased by

Aeronaves de Mexico • American Airlines
Ansett/ANA of Australia • Braniff Airways
Cathay-Pacific Airways • Eastern Air Lines
Garuda Indonesian Airways
KLM Royal Dutch Airlines • National Airlines
PSA–Pacific Southwest Airlines
Western Airlines

LOCKHEED ELECTRA

The finest short-to-medium haul turbine-age airliner—designed to assure you maximum return on every operating dollar.

LOCKHEED AIRCRAFT COMPANY, BURBANK, CALIFORNIA


Save time every time...
Southern
AIRWAYS
MEMPHIS
TUPELO
GREENVILLE
COLUMBUS
TUSCALOOSA
BIRMINGHAM
GADSDEN
ATHENS
ATLANTA
CHARLOTTE
SPARTANBURG
GREENVILLE
GREENWOOD
MONROE
VICKSBURG
JACKSON
NATCHEZ
LAUREL
BATON ROUGE
GULFPORT
BILOXI
MOBILE
EGLIN AIR FORCE BASE
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DOTHAN
ALBANY
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VALDOSTA
PANAMA CITY
JACKSONVILLE
NEW ORLEANS
Gulf of Mexico
FLY
Southern Airways
Connecting 31 Cities with the World
HELBROS — Precision Timepiece of Southern Airways

CONVAIR
240
CONVAIR
340
METROPOLITAN
440

The NEW CHALLENGER

For Short-Medium Routes!

—Newest Member of a Family of Greats

and NOW-Canadair

540 TURBO-PROP

These facts merit study:

- By special arrangement, Convair has transferred to Canadair all "440" tooling to start new "540" production line.
- Seat mile cost of 1.3 to 1.5 cents.
- Low operating costs make it profitable on moderate density routes . . . has 8% more seats than "440's" in standard configuration.
- Operational flexibility: uses any moderate size airport . . . has a range of 1500 miles with 2 hrs. fuel reserves . . . climbs quickly (1400 fpm) to smooth cruise altitudes of 15-20,000 ft.
- "Eland-6" engines provide wide speed range . . . overhauls at long periods . . . sectionalized design for easier maintenance. Each engine develops 3500 eshp at take-off, allowing increase of 4100 lbs. over "440" in max gross weight. Cruise speed 325 mph at 20,000 ft.
- Aircraft is in production for the Royal Canadian Air Force . . . first deliveries, July, 1959.

The turbine-powered Canadair "540" is the newest development in a series of great aircraft—the Convair "240's", "340's" and "440's"—aircraft that have already accumulated some 6,000,000 hours of world-wide operating experience—aircraft that have proved themselves to be unmatched in their flight range for speed, efficiency and economy of operation.

With Napier Eland turbine power added, the Canadair "540" has the increased range, speed and payload that identify it as the *great new challenge* on short and medium range routes.

The result is a new airliner unsurpassed in performance characteristics and earning power.

Your inquiries are invited.

C-L CANADAIR LIMITED

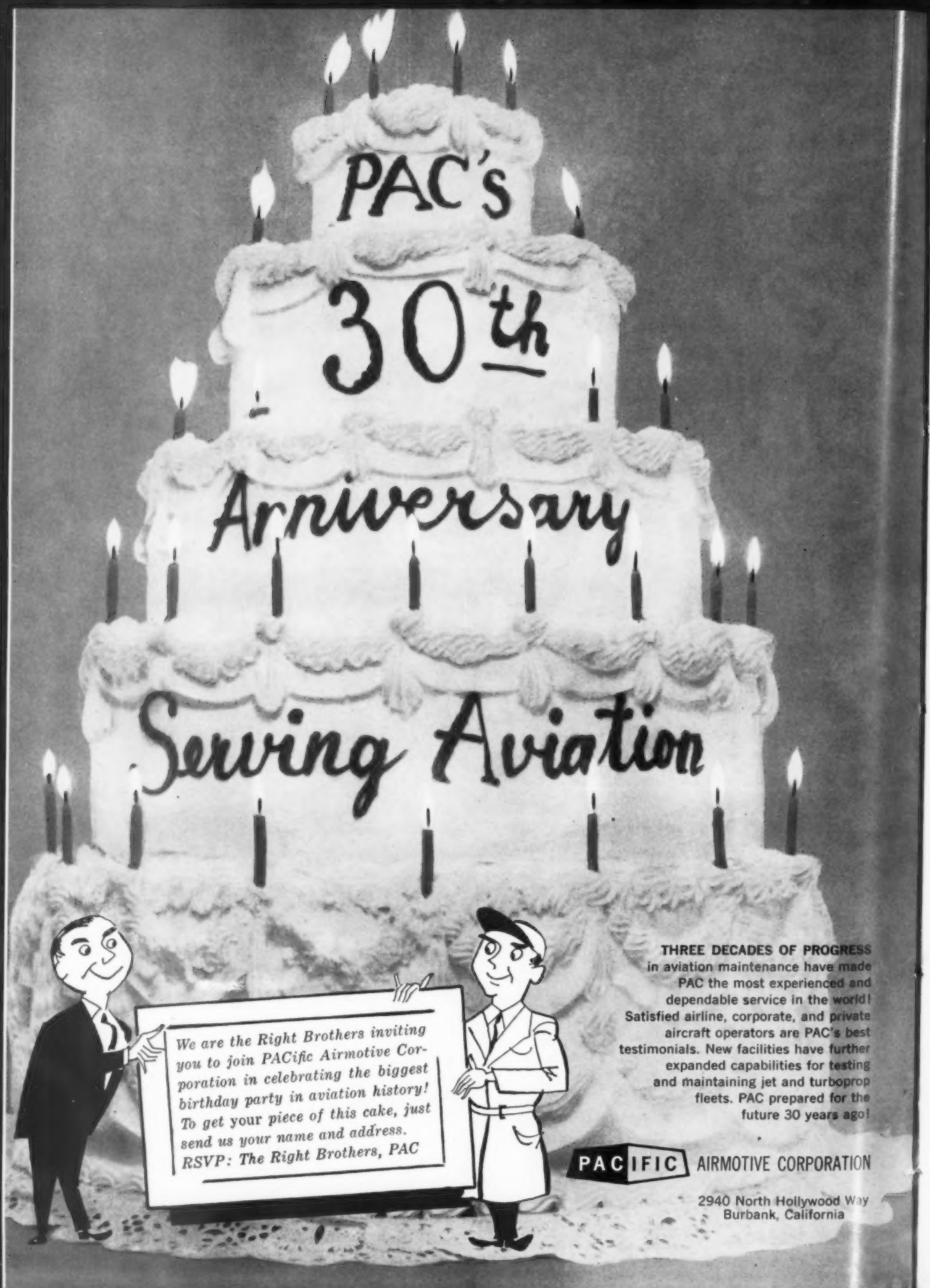
CANADAIR

Limited, Montreal, Canada

- **Aircraft**
- **Guided Missiles**
- **Research and development**
- **Nuclear Engineering**

CANADAIR IS A SUBSIDIARY OF GENERAL DYNAMICS CORPORATION

CA58-CL66-86UST


PAC's
30th
Anniversary
Serving Aviation
We are the Right Brothers inviting you to join PACific Airmotive Corporation in celebrating the biggest birthday party in aviation history! To get your piece of this cake, just send us your name and address.
RSVP: The Right Brothers, PAC

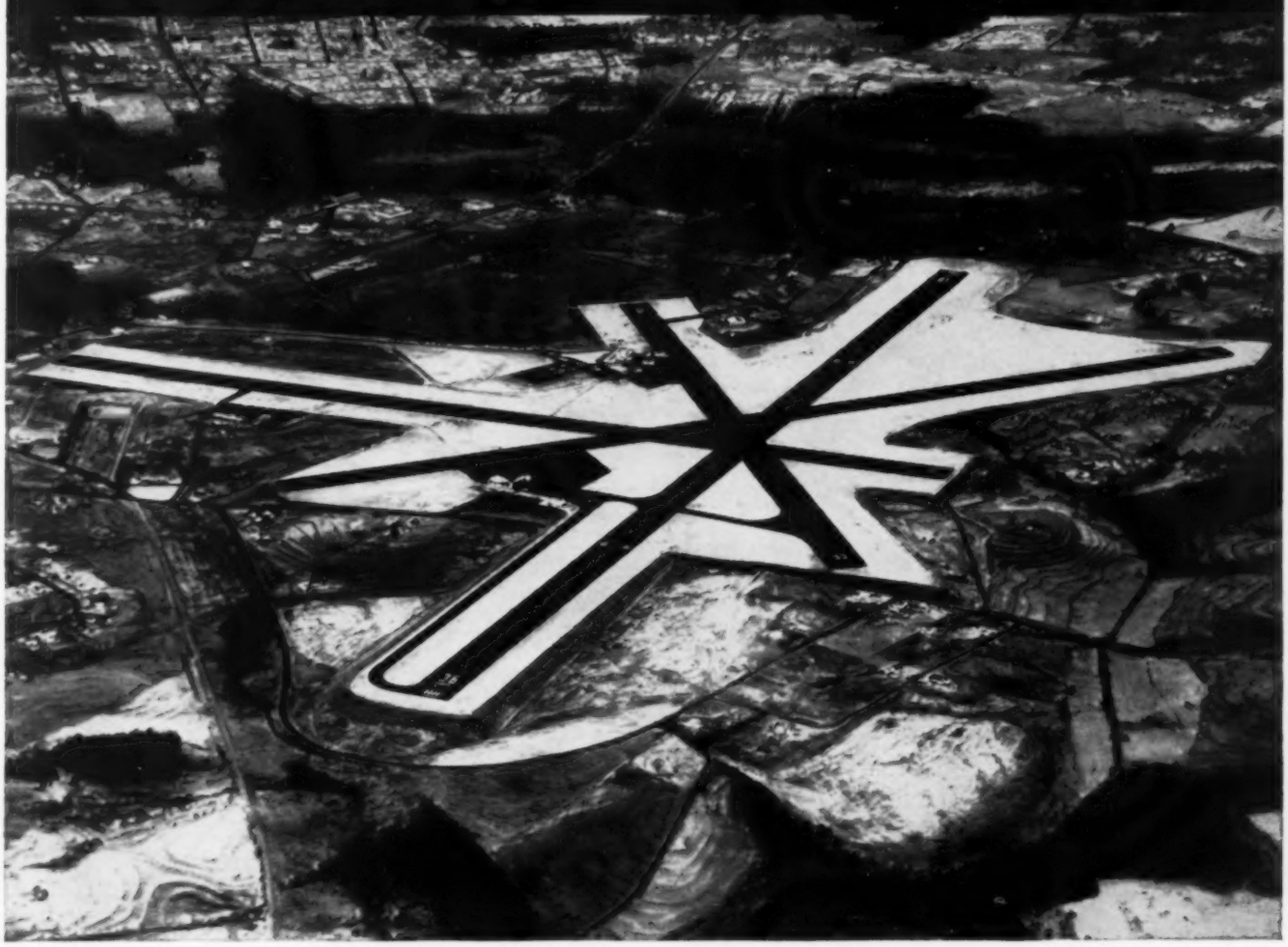
THREE DECADES OF PROGRESS in aviation maintenance have made PAC the most experienced and dependable service in the world! Satisfied airline, corporate, and private aircraft operators are PAC's best testimonials. New facilities have further expanded capabilities for testing and maintaining jet and turboprop fleets. PAC prepared for the future 30 years ago!

PACIFIC AIRMOTIVE CORPORATION

2940 North Hollywood Way
Burbank, California

Test your cross-country memory

Can you name this airport?



Clue: *The Southern textile center it serves lies just east of the Blue Ridge Mountains. (Answer below.)*

Now test your aviation-oil memory: Can you give two important reasons why Gulf oils are better for your engine?

1. In addition to providing efficient, thorough lubrication, Gulf aviation oils help keep engines *clean*—and safe!

2. Gulf-clean engines can go longer between overhauls, because there's less wear and tear on engine parts.

Choose either new Gulfpride Aviation Oil Series D, the detergent oil, or Gulf Aircraft Engine Oil, the straight mineral oil—both keep your engine Gulf-clean and safe.

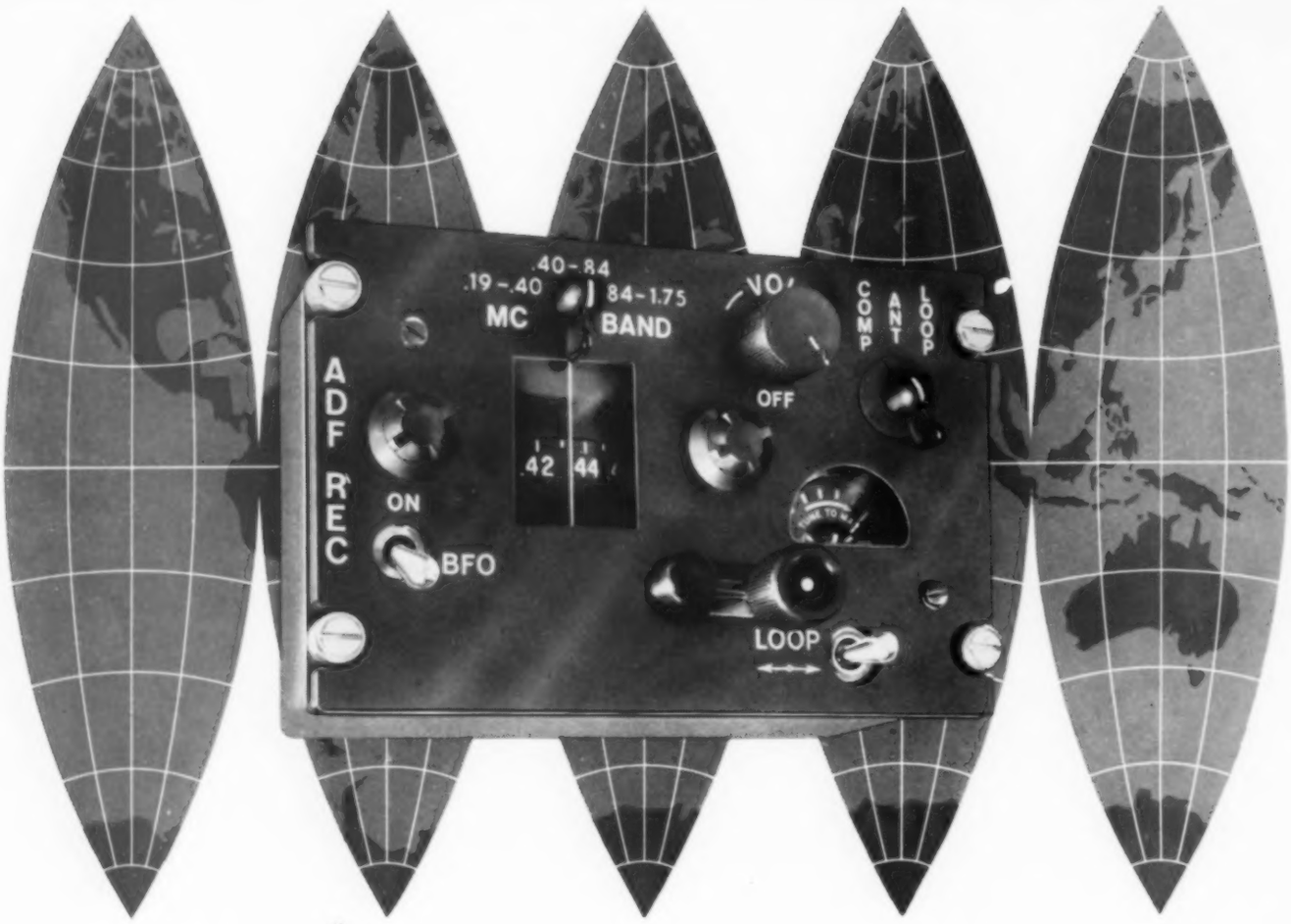
The airport is the Greenville, South Carolina Municipal Airport, a little over three miles east of the city. All runways are paved. The longest is 5,395 ft.

When you land here, we know you'll be pleased with the friendly Gulf service and the fine Gulf products available.

GULF

AVIATION PRODUCTS

Fly safely with a Gulf-clean engine



TYPE 21A ADF WEIGHS ONLY 19.7 POUNDS

Component Unit Weights:

Receiver, 6.8 lbs.; Loop, 4.3 lbs.; Loop Housing, 0.5 lbs.; Indicator, 1.3 lbs.; Control Unit, 1.6 lbs.; Power Unit, 5.2 lbs.;
CAA Certificate No. 1R4-9 U.S. Military: AN/ARN-59
British Certificate of Approval VC-78

World-Wide navigation aid

The Time Tested ADF Now in Less Weight, Less Space

The ADF is a basic air navigation instrument, used in all parts of the world, turnable to some 60,000 transmitters. But the important thing now about the ADF is that ARC has engineered an ADF system down to less than 20 pounds in weight, with a comparable saving in space.

Now pilots enjoy the advantages of dual installations of this compact miniaturized equipment in tolerable weight and space requirements.

The ARC Type 21A ADF is built to today's more critical speed and environmental demands. It has hermetic sealing of vital components, such as the entire loop assembly. It covers all frequencies from 190 kc to 1750 kc . . . operates on only 2.8 amps at 27.5 volts dc input or equal power at 13.5 volts. A significant feature is the extremely low loop drag—only two inches outside the aircraft skin.

Ask your dealer for detailed literature.

Dependable Airborne Electronic Equipment Since 1928

Aircraft Radio Corporation **BOONTON, NEW JERSEY**

Omni/Loc Receivers • Course Directors
LF Receivers and Loop Direction Finders • UHF and VHF Receivers and Transmitters (5 to 360 channels)
10-Channel Isolation Amplifiers • High Powered Cabin Audio Amplifiers • Interphone Amplifiers • Omnirange Signal Generators and Standard Course Checkers • 900-2100 Mc Signal Generators

ARC

Operation Hourglass completes 1000 flight hours in 84 days

Allison Prop-Jet Powered Convair 340 Duplicates Commercial Flight Schedules— averages 12 hours per day in the air.

The record speaks for itself: 649 flights to 77 cities in 32 states • 1825 miles nonstop from Burbank to Indianapolis in 5 hours, 40 minutes • 12 hours flight-time each day—for 84 days—with only line maintenance on engines and propellers • Routine cruise—360 mph at 20,000 feet • Specific fuel consumption well within specification from sea level through 20,000 feet • Oil consumption—10 gallons per engine in 1000 hours.

Proving beyond doubt the operational readiness, flight dependability and superior economy of Allison Prop-Jet Engines and Aeroproducts Turbo-Propellers, Operation Hourglass clearly demonstrates why 11 airlines of the world have ordered 144 Allison Prop-Jet powered Lockheed Electras for medium- and short-range jet-age service.

GM GENERAL MOTORS AIRCRAFT POWER

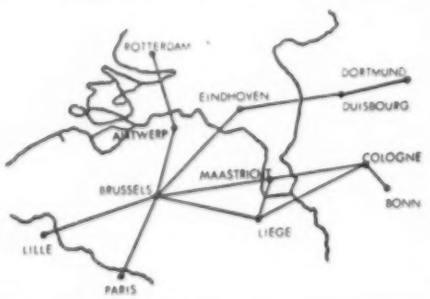
ALLISON DIVISION OF GENERAL MOTORS, Indianapolis, Indiana

ALLISON PROP-JET POWER

Comfort . . . Vertol 44 . . . Brussels World's Fair

SABENA

INTERNATIONAL HELICOPTER NETWORK



Among the many firsts on show at the Brussels World's Fair is the new multi-city helicommuter service which links the Fair grounds directly to airports in Paris, Rotterdam, Cologne and Bonn. SABENA Belgian World Airlines operates these flights right to the heart of the Fair... and Vertol 44 tandem-rotor helicopters play an important part in the operation.

These stable, comfortable craft are a logical choice for such an assignment. They can seat up to 15 passengers in their long, airliner-type cabin—provide a window next to every set of seats, a cabin-long luggage rack—and permit free movement in flight by passengers.

A lavatory is provided for long-stage flights. The cabins have been insulated against sound and vibration. All of it adds up to more fun, more comfort... more satisfied passengers.

Vertol 44's are also available as utility transports capable of airlifting up to 19 passengers or 2 1/2 tons of cargo. This version performs multiple duties in petroleum, mining, lumbering or construction.

VERTOL *Aircraft Corporation*

MORTON, PENNSYLVANIA

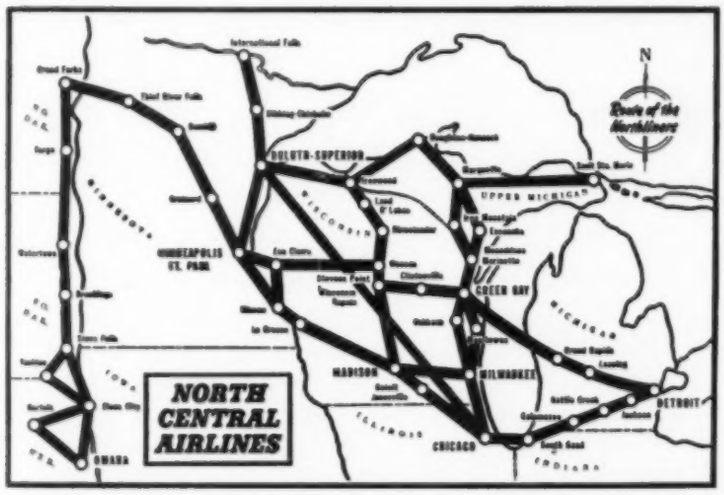
SUBSIDIARY, ALLIED RESEARCH ASSOCIATES, INC., BOSTON, MASS

Again... AMERICA'S LEADING LOCAL AIRLINE

The 10 year progress record of NORTH CENTRAL AIRLINES

For the third successive year, North Central Airlines is first among the nation's 13 local airlines in passengers, air mail and air express.

Quite a record for an airline that just celebrated its 10th anniversary on February 24, 1958. Back in 1948, North Central started operations — flying a 1,080-mile route in only two states, Wisconsin and Minnesota. In the ten years since, North Central has achieved this record of progress:



The Route of the Northliners — linking the key cities of nine north central states.

- strengthened and expanded its service to 53 cities in 9 states . . . increased its fleet to 27 planes . . . its route miles to 3,471
- enplaned a total of 680,930 passengers in 1957, a 24% increase over the 1956 figure of 549,654 passengers . . . flew a total of 9,495,624 revenue miles, a 20% increase over 1956
- air-mail volume in 1957 reached a record 2,666,408 lbs. — a gain of 23% over the previous year
- air express during 1957 totaled 4,884,429 lbs. — again the leading total among local service airlines
- increased existing high frequency service on several route segments: Chicago to Detroit and intermediate cities, Minneapolis-St. Paul and Duluth-Superior, Chicago and Milwaukee
- inaugurated new service between Grand Forks, North Dakota, and Omaha, Nebraska, via intermediate cities
- inaugurated non-stop service between Chicago and Duluth-Superior, linking these key cities with 4 flights daily
- inaugurated new service on the chain of key cities between Minneapolis-St. Paul, Duluth-Superior and Sault Ste. Marie, Michigan
- set a new record among local airlines with a single day's total of 2,739 passengers on October 4, 1957 — a monthly total of 70,333 passengers in August and its 2 millionth passenger in April of that year
- received the National Safety Council Aviation Award every year of operation, carrying 2,504,380 passengers and flying 391,180,627 miles

This is the chronicle of North Central Airlines — America's leading local airline — looking to a future of continued leadership and dynamic growth.

GENERAL OFFICES: MINNEAPOLIS, MINN.

NORTH CENTRAL AIRLINES

AMERICA'S LEADING LOCAL AIRLINE

Serving 53 key cities in 9 states: **• MINNESOTA • MICHIGAN • WISCONSIN • ILLINOIS INDIANA • IOWA • SOUTH DAKOTA • NORTH DAKOTA • NEBRASKA**

U. S. Patent No. 2,687,102

Night view of L. B. Smith's new 80,000 square foot hangar at International Airport, Miami, Florida. The clear span area is 360 feet long by 80 feet deep. Vertical clearance of 22 feet.

Every square foot of hangar space— a square foot of usable space

Cantilever type construction means no obstructions of any nature to interrupt the clear span space, providing perfect housing for the maintenance and storage of aircraft. Enclosed space to the rear is spacious area for workshops, parts and office facilities.

This advance design is the result of 17 years experience in building several hundred hangars, of all sizes and types, which have withstood the most exacting load forces of every area—from the heaviest snow loads of the north and east, to the hurricane wind forces of the coast and the earthquake shock loads of the west.

Consult us before you build a hangar of any size, as this new modern cantilever type building can be constructed to your exact needs and in most cases will cost no more than older fixed span or limited clearance designs.

Drop by booths number 24 and 25 — Let's talk hangars

Single Cantilever
Double Cantilever
Facing Cantilever

Erwin • Newman Co.

Designers and Constructors

- Any Height
- Any Length
- Any Depth

P. O. BOX 1308 • PHONE JAckson 4-8186 • HOUSTON, TEXAS

marching forward with...

AVIATION

Grumman Gulfstream

The aviation industry and RCA have long been partners in progress. To this partnership, RCA has contributed a wide range of electronic aids that have played important roles in bringing aviation to its present high level of dependability, comfort and safety. A few that have found special application in civil aviation are named here.

RCA Air Traffic Control Transponder (AVQ-60) automatically and instantly enables the traffic control radar to locate and positively identify aircraft within its range. Light in weight and compact, it is designed for airline, business and military use.

RCA Weather Avoidance Radar (AVQ-50) brings the comfort and time-saving features of airborne weather radar to aircraft with power and weight limitations, such as Aero Commander, Twin Bonanza, Beechcraft Super-18.

RCA Storage Display Tube Indicator increases the effectiveness of the display by permitting the reading of the indicator in broad daylight without hood or shielding.

RCA Weather-Mapping Radar (AVQ-10), now used by many of the world's leading airlines, enables the pilot to "see" and evaluate the weather many miles ahead so that he may avoid areas of turbulence. This makes long and costly detours unnecessary, saves time and increases passenger comfort.

RCA Marker Beacon AVR-200 meets the demand for lightness, transistorized design, low power requirement and minimum maintenance. Functions on DC or AC primary, and actually needs less power than any of the three lamps it operates.

Ask for full information with regard to any or all of these items.

RCA

Tmk(s) ®

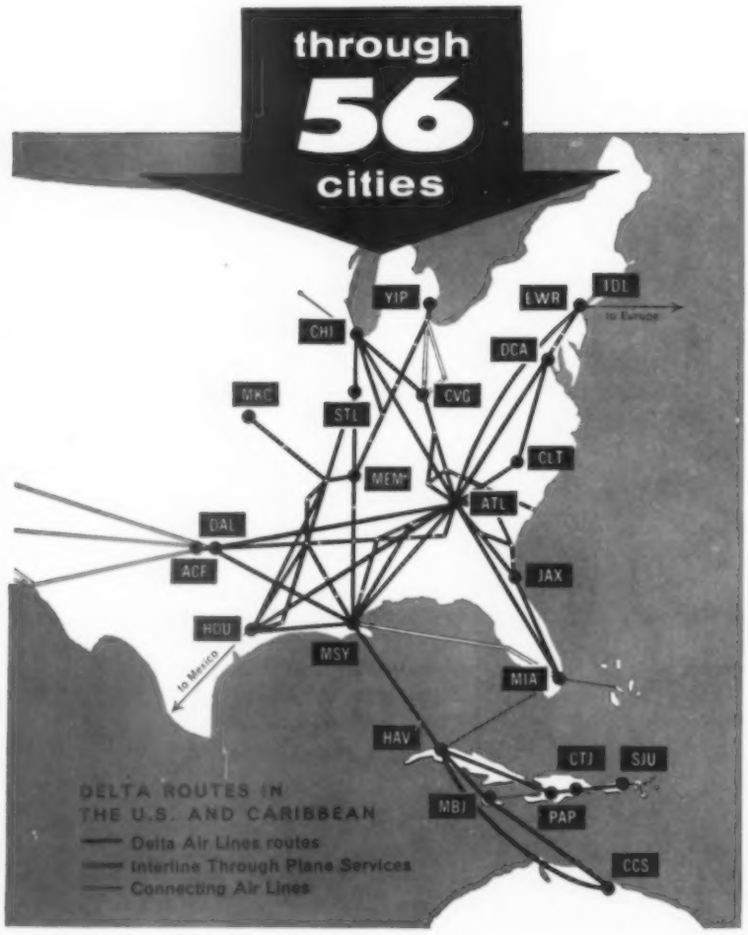
RADIO CORPORATION of AMERICA

CUSTOM AVIATION EQUIPMENT

11819 W. OLYMPIC BLVD. LOS ANGELES, CAL.

DELTA makes connections with 54

Trunk, Local Service and Overseas airlines



Nearly all cities served by Delta are "connection cities" and since interline business is about a third of our total, you can bet this is important to us.

We go all out to take care of your passengers in the hospitable Delta tradition . . . keep them happy all the way! We'll also do our best to maintain the "balance of trade" with a fair exchange in return. Interline business is a two-way street and we want to make it mutually profitable.

Please accept our sincere invitation to drop in and see us when you're in Atlanta. George Shedd is our Interline Sales Mgr.

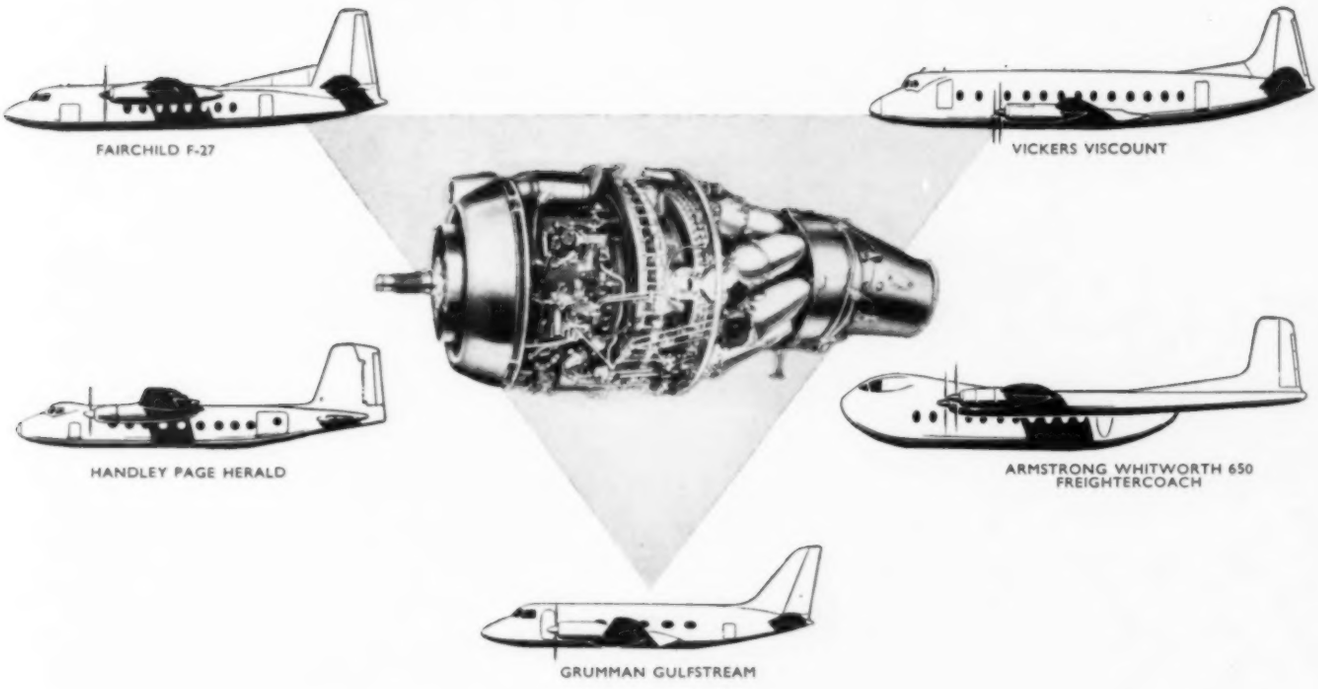
One of America's Pioneer Scheduled Airlines

Delta AIR LINES

GENERAL OFFICES: ATLANTA, GEORGIA

ROLLS-ROYCE
DART
PROP-JETS

for airline, local service and executive operation.



The Rolls-Royce Dart is the most proven prop-jet in the world and has flown over 4,000,000 hours in scheduled airline service.

ROLLS-ROYCE LIMITED, DERBY, ENGLAND.

AERO ENGINES . MOTOR CARS . DIESEL AND GASOLINE ENGINES . ROCKET MOTORS . NUCLEAR PROPULSION

WE'VE CHANGED OUR NAME

SOUTHWEST AIRWAYS

Now PACIFIC AIR LINES

A new name for Southwest Airways after more than 11 years of service during which almost 2 million passengers were flown more than 376,000,000 miles.

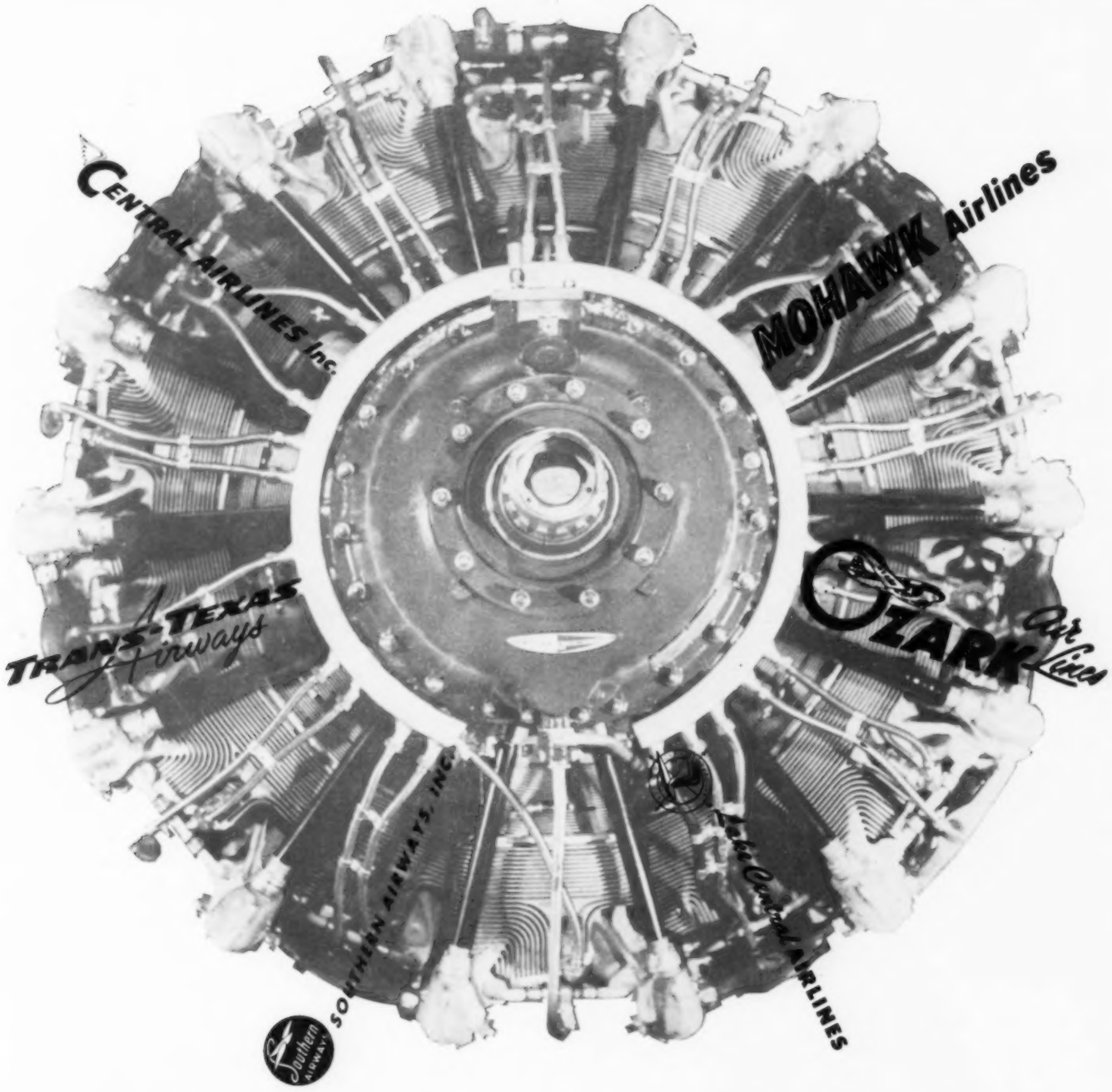
Fly PACIFIC AIR LINES
SERVING 33 CITIES IN
CALIFORNIA, OREGON and NEVADA

PACIFIC AIR LINES

formerly **SOUTHWEST AIRWAYS**

EXECUTIVE OFFICES • SAN FRANCISCO INTERNATIONAL AIRPORT

dallas airmotive salutes

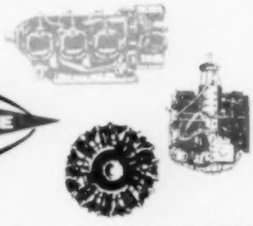


on the occasion of the 9th annual local service issue

Dallas Airmotive, the home of reliable engine overhaul, is proud to salute Central Airlines, Lake Central Airlines, Mohawk Airlines, Ozark Airlines, Southern Airways and Trans-Texas Airways. Dallas Airmotive is also pleased that these six airlines use its engine overhaul facilities for their fleets.

Washington Office:
Woodward Building
733 15th Street N. W.
Washington, D. C.

New York Office:
1219 Marine Terminal Building
La Guardia Station
Flushing, N. Y.



DALLAS AIRMOTIVE INC.

6114 FOREST PARK ROAD FLeetwood 1-3771 • DALLAS, TEXAS

Braniff Salutes the Local Service Carriers!

And thanks them for their continuing cooperation and service . . . which will always be a most important part of Braniff's daily operation.

BRANIFF *International* **AIRWAYS**

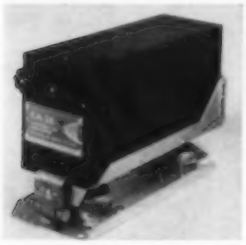
Braniff serves MORE major cities in the USA and SOUTH AMERICA . . . than any other airline.

What's a pound worth to you?

REDUCE Weight, Power Drain and Size!!!

Proven Transistorized Products

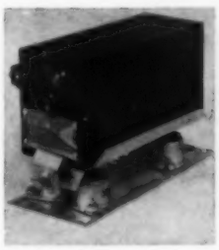
Designed to RTCA Paper 100-54/DO-60 Specifications by **FLITE-TRONICS, inc.**



CA-2A

The CA-2A Audio Power Isolation Amplifier provides pilots of aircraft with a selection of 1 to 12 audio signals either simultaneously or individually at the flick of a switch. The 7.5 watt power output makes loudspeaker operation practical even in the highest noise level cockpits. Its small size permits installation in formerly unusable space. Available in 14 or 28 VDC models. Size: W-2¼", H-2⅞", L-5¾". Weight 1 lb., 2 oz.

CA-3A



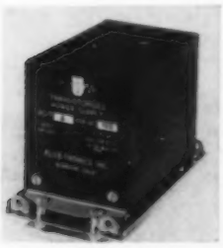
The CA-3A Speaker Amplifier is designed to provide satisfactory loudspeaker operation in aircraft. Light in weight, compact and economical, the CA-3A has sufficient output to overcome cockpit noise under the most severe conditions. The maximum output power is 7.5 watts and is realized with an input power of approximately 35 milliwatts. Size: W-2¼", H-3⅛", L-6½". Weight 1 lb., 4 oz. Available in 14 or 28 VDC.

DS-5B

The DS-5B is a dual Station Audio Isolation Amplifier system that permits either station to select independently 12 incoming audio signals for either headphone or speaker operation, also includes an interphone system. The unique inter-channel isolation system and control functions eliminate the necessity of an individual relay for each channel. Short ¼ ATR. Weight 4 lb., 11 oz. 7½ watts output available per station.

PC-6

The PC-6 is a D.C. to D.C. Power Converter which provides 28 VDC power in aircraft with 14 VDC electrical system. R89B Glideslope Receivers, instruments, and other equipment can be operated with the PC-6. Periodic maintenance is not necessary as no moving parts are employed to realize the power conversion. Continuous power is available up to 55 watts. If additional power is desired, units may be paralleled. Size: W-2¼", H-3⅛", L-4¼". Weight 1 lb., 3 oz.



PC-7A, PC-8A

PC-7B, PC-8B

The PC-7 and PC-8 is a D.C. to high voltage D.C. power converter. Installation of this new type converter is quick, simple, and inexpensive. To directly replace units now with dynamotor mount type receptacles, specify PC-7A for 14 VDC systems or PC-8A for 28 VDC systems. To replace dynamotors with plug-type receptacles, order the PC-8B for 28 VDC systems or the PC-7B for 14 VDC systems. Electrical specification — Input 28 VDC — Output 220 VDC at 160 ma, 250 VDC at 140 ma or 285 VDC at 125 ma. Input 14 VDC — Output 220 VDC at 113 ma, 250 VDC at 100 ma or 285 VDC at 85 ma. Size: W-2-5/16" x H-2⅝" x L-4½". Weight 1 lb., 3 oz. Saves 30 to 50% Power Drain.

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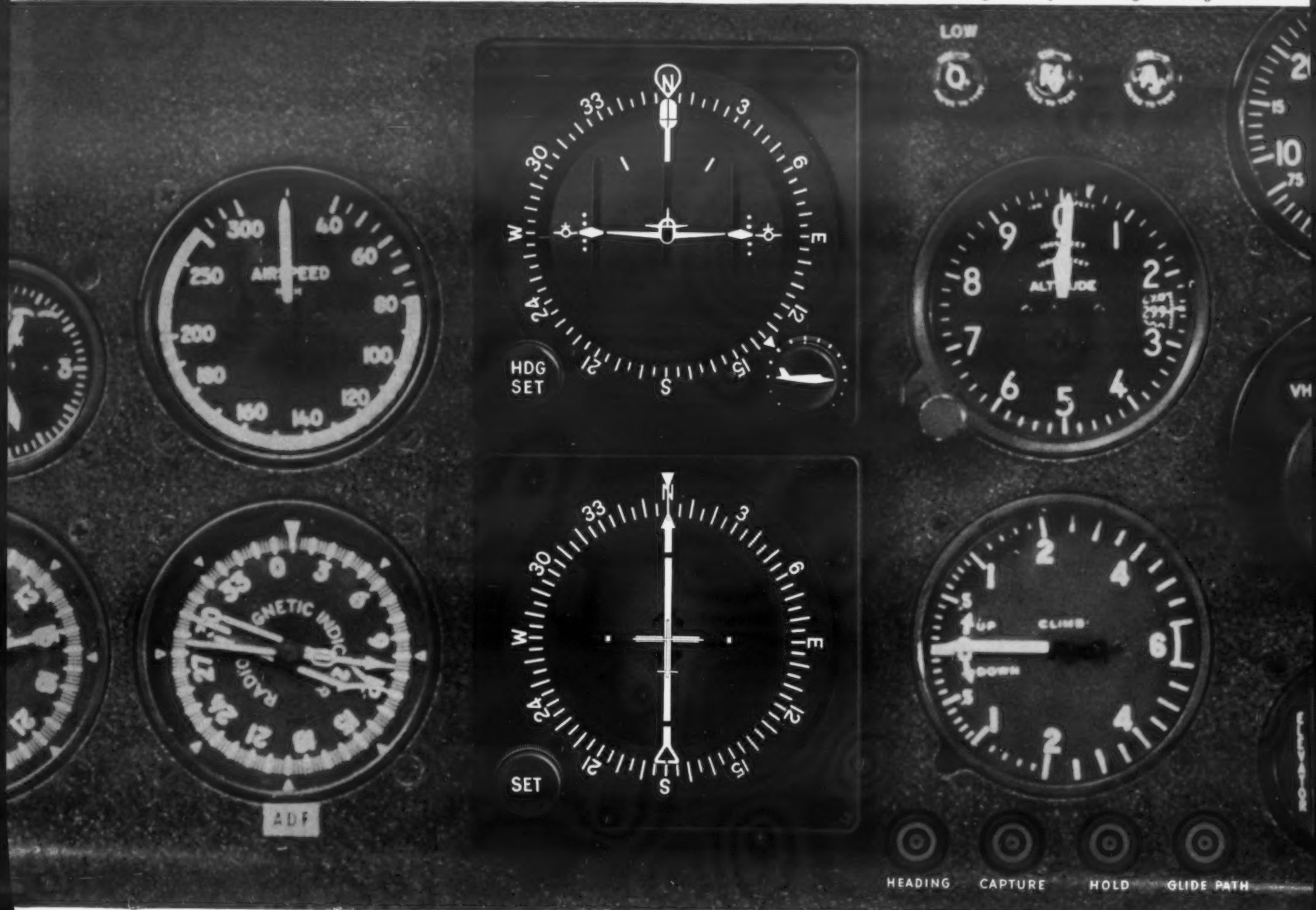

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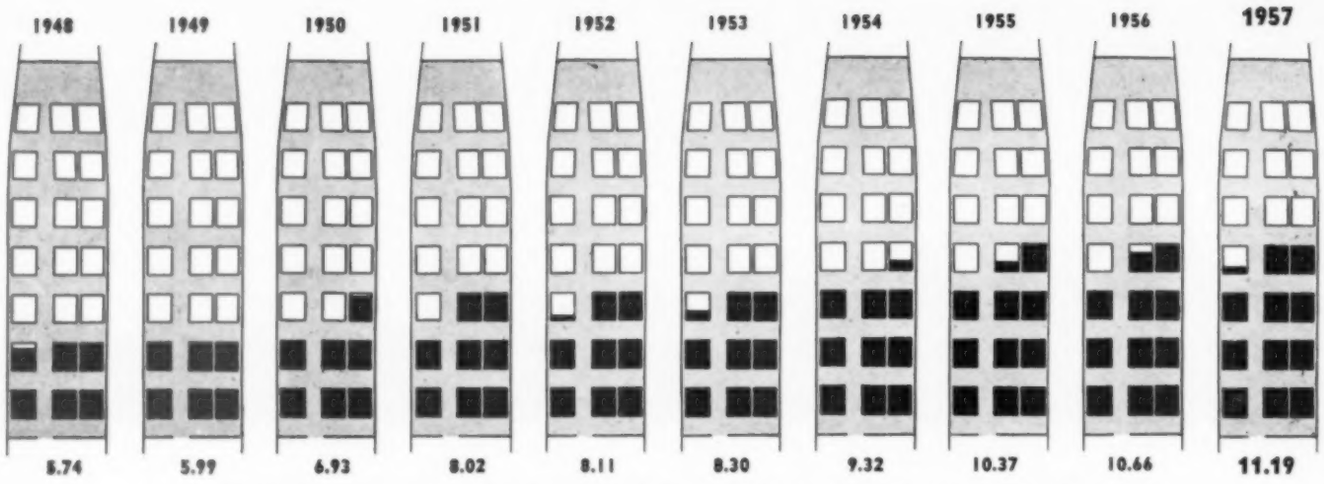


AVERAGE REVENUE PASSENGER LOAD PER YEAR FOR LOCAL SERVICE AIRLINES

Note how steady growth is filling the seats in this chart which uses 21-seat DC-3 cabin for purposes of illustration.

A New Era Dawns For The Locals

THE hard days of plowing in wet mud might be ending for the nation's local service airlines. A few rays of light are beginning to shine through the foggy and gloomy atmosphere which has surrounded them since their inception twelve years ago.

By GEORGE E. HADDAWAY

Recent Civil Aeronautics Board decisions and public statements by members of the CAB are part of the strong evidence that more favorable winds will blow on these hardy carriers providing basic air transportation service to hundreds of communities.

CAB Chairman James R. Durfee recently called for "a drastic revision in approach" to the local carriers' mail rate problems. He proposes in no uncertain terms that the Board must improve the regulatory framework in which it will be easier for the locals to do their job, adding that "we cannot achieve both financial stability for the carriers and subsidy control for the government under the present rate-making system."

In a similar vein, CAB Member Louis J. Hector, in a concurring opinion granting Mohawk Airlines temporary mail pay increases, stated that the Board "should no longer delay an attempt to provide genuine profit incentives to the management of subsidized carriers in order to give them a real drive to increase their earnings and efficiency."

"The cold winds of the competitive market," he added, "will in the long run be a better determinate of the proper quality and quantity of service to be offered the public than detailed decisions of a government agency. We should strive for a formula whereby local service management may judge for itself, within the simple, clear standards of profit and loss, whether to expand service or improve its quality."

Not once in the 12-year history of the locals has there been so much mounting evidence that a brighter day is dawning. In a recent decision by the Court of Appeals for the District of Columbia, we find these significant observations, reminding the

Local Service Airline Growth, Revenues
Years 1945 through 1957

Year	Passenger Amount	Passenger % of Total	Total Non-Mail Amount	Total Non-Mail % of Total	Mail Pay Amount	Mail Pay % of Total
1945	$ 64,701	45.0	$ 65,874	45.8	$ 77,890	54.2
1946	314,638	29.2	348,903	32.4	728,179	67.6
1947	2,280,124	26.99	2,468,397	29.9	5,795,932	70.1
1948	4,666,549	32.9	4,996,550	35.2	9,207,621	64.8
1949	7,355,366	35.0	7,876,031	37.5	13,132,690	62.5
1950	10,196,781	37.6	11,393,129	42.0	15,741,612	58.0
1951	15,757,568	43.9	17,338,545	48.3	18,569,578	51.7
1952	19,172,025	46.6	20,573,899	50.0	20,602,272	50.0
1953	22,663,146	46.7	24,333,992	50.2	24,153,000	49.8
1954	27,673,195	50.6	29,821,463	54.5	24,893,753	45.5
1955	32,840,504	57.4	35,342,823	61.7	21,898,850	38.3
1956	40,165,958	59.3	43,392,973	64.1	24,318,037	35.9
1957	47,464,945	57.8	51,278,631	62.4	30,861,311	37.6

—(Ray & Ray Compilation)

Local Service Airline Growth, Operations
Years 1945 through 1957

Year	Revenue Miles	Revenue Passengers	Revenue Passenger Miles (000)	Passenger Load Factor (%)	Revenue Ton Miles (000)	Ton Mile Util. Factor (%)
1945	310,783	4,452	1,312	52.76	136	42.50
1946	1,287,971	25,118	6,812	37.92	637	41.35
1947	8,354,787	236,997	46,990	30.08	4,666	31.93
1948	16,335,284	427,276	88,937	27.35	9,026	29.01
1949	24,208,377	683,601	136,643	28.51	14,318	30.90
1950	33,552,214	983,205	199,612	33.02	21,344	30.90
1951	37,797,136	1,462,083	291,296	38.20	30,709	35.30
1952	40,697,348	1,703,730	336,919	38.64	35,131	35.69
1953	45,085,915	1,999,867	387,060	39.47	39,645	35.67
1954	48,447,951	2,423,432	461,736	44.59	47,162	40.00
1955	51,802,611	2,963,936	537,017	47.99	54,988	43.26
1956	60,529,316	3,516,242	644,994	48.34	66,474	44.04
1957	68,458,103	4,235,921	766,214	49.87	78,514	45.33

—(Ray & Ray Compilation)

Federal aviation agency of its duties under the law:

"The objective of the Congress is plain. It is the maintenance and continued development of air transportation to the extent and of the quality required for the national commerce, postal service and defense. The objective is on a grand scale. It is for the public interest. It is vital. The words are important because they depict with clarity a Congressional policy. Moreover, the payment is 'to enable such air carrier to maintain and continue the development of air transportation.' Congress did not put the responsibility for development of an air transportation system wholly upon Government agencies. In this statute the Congress sought to utilize the abilities and capacities of the private air carriers. The purpose of the compensation is to enable the carriers 'to maintain and continue the development.' . . . The need which the statute seeks to meet is not the need of the carrier for funds for its own private purposes, for its own operation or profit. *It is the need of the carrier for funds to enable such carrier to carry on for the purposes depicted by the Congress in the interest of the Nation.*" (Italics added.)

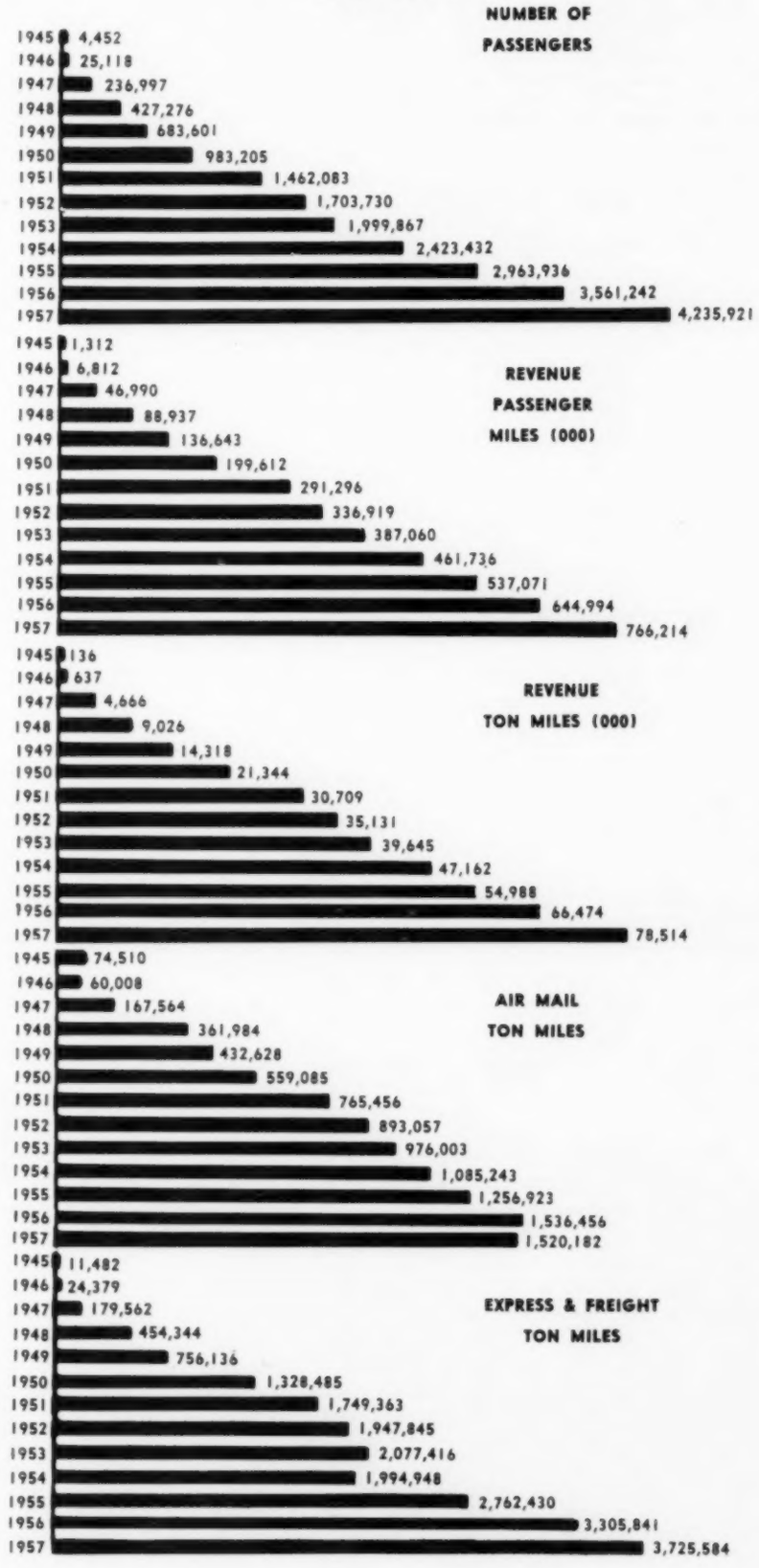
In a speech last April, Senator Alan Bible of Nevada observed: "If responsible members of Congress take a sympathetic view of the plight of the local service airlines it is only the natural reaction born of a desire to be fair. It is my own view that our government has, on many occasions, dragged its feet, in considering affirmative steps to assist these airlines in remaining aloft in a financial climate that is not perpetually socked in. Without in any way wishing to deprecate a policy of neighborliness to our foreign friends, it does seem appropriate to point out, however, that the U. S. Export-Import Bank has, since its founding in 1934 to March of this year, extended loans to foreign airlines, for the purchase of airplanes in this country, the staggering total of $154,645,000. This undoubtedly is good business and sound policy, but I cannot help but reflect that if similar generosity had been bestowed upon our local carriers there would today be not only profits but — miracle of miracles — actual dividends.

"This is not a case of charity beginning at home," the Senator stated, "because the local service airlines do not want a handout — they want only the opportunity to provide optimum service with the reasonable expectation of a return on their investment."

With the Civil Aeronautics Board apparently in a mood to change its restrictive policies toward the local carriers, with the Courts upholding the original intent of the Civil Aeronautics Act of 1938 and with leaders in Congress like Alan Bible of Nevada and Mike Monroney of Oklahoma taking up the cudgel, we find solid ground for renewed hope that a major turning point in the history of local airlines will come this year.

Last month the Board released its decision in the "Seven States" case and the extension of routes in that area of

Trends of Progress in Local Air Service 1945-1957



Local Service Airlines Operating Expenses Years 1945 through 1957

Year	Direct Aircraft Expense: Flying Operations	Maintenance—Flight Equip.	Depreciation—Flight Equip.	Total	Ground and Indirect Expense	Total Expense
1945	$ 56,415	$ 37,139	$ 16,517	$ 110,071	$ 117,222	$ 227,293
1946	268,304	187,430	107,600	563,334	640,040	1,203,374
1947	1,883,686	1,115,027	854,848	3,853,561	4,123,983	7,977,544
1948	4,134,962	2,072,832	1,303,563	7,511,357	6,995,512	14,506,869
1949	6,280,727	3,147,538	1,910,785	11,339,050	10,216,991	21,556,041
1950	8,422,726	3,463,246	1,492,366	13,378,338	13,731,864	27,110,202
1951	10,678,202	4,211,381	1,596,032	16,485,615	18,541,338	35,026,953
1952	13,116,658	5,351,865	2,070,486	20,539,009	21,970,066	42,509,075
1953	15,430,335	6,354,124	2,422,092	24,206,551	25,614,810	49,821,361
1954	17,246,089	5,950,087	1,893,201	25,089,377	28,016,163	53,105,540
1955	18,077,016	6,619,511	1,811,914	26,508,441	30,329,525	56,837,966
1956	21,615,379	8,284,666	2,090,057	31,990,102	36,349,167	68,339,269
1957	26,509,789	10,908,338	2,836,411	40,254,538	42,645,677	82,900,215

—(Ray & Ray Compilation)

Local Service Airline Revenues and Expenses Years 1945 through 1957 Cents Per Revenue Mile

Year	Revenues: Passenger	Total Non-Mail	Mail Pay	Total	Total Expense	Break Even Need
1945	20.82	21.20	25.06	46.26	73.14	51.94
1946	24.43	27.09	56.54	83.63	93.43	66.34
1947	27.29	29.55	69.37	98.92	95.48	65.93
1948	28.57	30.58	56.37	86.95	88.81	58.23
1949	30.38	32.53	54.25	86.78	89.04	56.51
1950	30.39	33.95	46.92	80.87	80.80	46.85
1951	41.69	45.87	49.13	95.00	92.67	46.80
1952	47.11	50.56	50.62	101.18	104.45	53.89
1953	50.27	53.97	53.57	107.54	110.50	56.53
1954	57.12	61.56	51.38	112.94	109.61	48.05
1955	63.40	68.23	42.27	110.50	109.72	41.49
1956	66.36	71.69	40.18	111.87	112.90	41.21
1957	69.33	74.91	45.08	119.99	121.10	46.19

—(Ray & Ray Compilation)

Local Service Airlines Selected Route Pattern Data As of December 1957

Carrier	Population Served (1957) (000)	Number of Cities Served: Total	Exclusive Local Service	% of Total Exclusive	Route Miles	Average Segment Length
Allegheny	18,632.2	48	22	45.8	2,165	58.5
Bonanza	3,329.5	19	12	63.2	1,619	89.9
Central	4,665.4	34	17	50.0	3,354	86.0
Frontier	1,652.7	47	36	76.6	3,467	82.5
Lake Central	11,627.7	34	17	50.0	1,897	59.3
Mohawk	13,886.7	29	5	17.2	1,908	79.5
North Central	9,340.7	49	33	67.3	3,254	69.2
Ozark	10,121.9	49	20	40.8	3,557	79.0
Pacific*	4,440.1	32	20	62.5	1,812	64.7
Piedmont	4,771.6	50	14	28.0	2,820	72.3
Southern	3,646.9	31	12	38.7	1,985	68.4
Trans-Texas	4,855.6	51	29	56.9	3,816	79.5
West Coast	1,807.0	43	30	69.8	2,342	65.1
Total (unduplicated)	55,891.6	468	264	56.4	33,524	73.2

*Formerly Southwest

—(Ray & Ray Compilation)

Local Service Airlines Interline Traffic Exchanged with Trunk Airlines during 1957

Traffic from Local to Trunk Airlines: Number of Passengers	Revenue	Revenue per Passenger	Local Airline	Traffic from Trunk to Local Airlines: Number of Passengers	Revenue	Revenue per Passenger
87,437	$ 2,468,901	$28.24	Allegheny	145,695	$ 1,551,030	$10.65
21,417	897,189	41.89	Bonanza	50,042	650,547	13.00
39,946	1,280,406	32.05	Central	45,618	622,031	13.64
35,582	1,842,049	51.78	Frontier	77,200	1,239,724	16.06
42,386	1,112,062	26.24	Lake Central	77,312	766,477	9.91
61,812	1,733,171	28.04	Mohawk	108,165	1,352,003	12.50
142,688	4,432,243	31.06	North Central	344,551	3,603,252	10.46
114,446	3,304,946	28.88	Ozark	232,737	2,329,050	10.01
67,761	2,665,052	43.15	Pacific*	84,176	925,278	10.99
120,128	2,569,204	21.39	Piedmont	153,748	1,927,055	12.53
59,452	1,574,378	26.48	Southern	88,141	883,130	10.02
67,780	2,187,824	32.28	Trans-Texas	93,960	1,281,756	13.64
34,068	1,474,147	43.27	West Coast	49,180	529,413	10.76
888,903	$27,541,572	$30.98	Totals	1,550,525	$17,660,746	$11.39

*Formerly Southwest

—(Ray & Ray Compilation)

the middle west to the locals provides additional evidence that the steamroller of progress is at last beginning to move.

The pay-off will be, however, to what extent the mail rate section of the Board limbers up and how far the Board will go in allowing the carriers more freedom of operations over their present route structures. Nearly everybody but the Board seems to realize that better service to the public can be gained and subsidy requirements can be reduced by granting carriers more flexibility over their routes. As it stands now, any deviation from the route pattern as outlined in the certificate is accomplished by an exemption order which takes time, money and toil to achieve or by a route proceeding which is tougher and even more costly than getting an exemption order.

Flexibility for Non-Stops

The local carriers should be permitted to operate certain non-stop services between the larger traffic centers located fairly close together. The trend in trunk-line service patterns is strongly for long haul and there are many cities a couple of hundred miles apart or less with such meagre trunk schedules that commuter type service is virtually impossible. The trunk schedules are understandingly set to favor long-haul business, so it is often impossible to fly via trunk airline to a nearby city at the beginning of a business day and return that evening. Here is where auxiliary service could be furnished by the locals, simply by lifting the restriction that they must make all the intermediate stops in their certificate.

The non-stop local service would not compete with the trunk but be established only when the trunk's schedules were inadequate. This auxiliary service would be self-sustaining, without subsidy, and the law of economics would determine whether or not it succeeded — not the mandates of the CAB. This concept may not be greeted with cheers by the trunks but if it resulted in better service to the public and provided the locals additional revenues to cut their subsidy requirements, everybody would have to go along. The trunks know better than anyone else that a large preponderance of the travel market between the larger towns less than 250 miles apart is under-developed because of inadequate service.

There is always the danger of granting too much liberalized authority. Local air service should remain everything its name implies and the natural desire to drop the smaller, unprofitable

(Continued on page 72)

Foundation For Greater Progress

Last year local service airlines carried over 4,000,000 passengers, three and one-half times the trunks carried in 1938. . . . Their 10-year records since 1948 show passenger miles have increased seven fold, seat-miles five-fold, mail volume four and one-half times, air express and freight tonnage eight-fold. . . . Passenger boardings per station have quadrupled, load factor has risen from 27.4% in 1948 to 45.7% in 1957. . . . But the percentage of public service revenue to total revenues has shrunk from 75% in fiscal 1948 to only 34% currently.

By STUART G. TIPTON, President
The Air Transport Association of America

OVERHAUL of the Civil Aeronautics Board's methods of regulating the local service airline industry is long overdue. So it's good news that the Board has announced it is reviewing its regulatory policies and procedures.

This action should have been taken a long time ago. While amassing a phenomenal record of public service, the local service airlines have experienced continual financial problems. They have been the victims of a regulatory philosophy that actually serves to retard development, a policy that usurps the prerogatives of honest, efficient and economical management. It has kept the industry on starvation rations, a diet that inhibits planning and discourages investment in productive plant.

The local service airlines have progressed in public service despite a negative regulatory climate.

Pursuing a program of constantly increasing their public usefulness, the local airlines have steadily enlarged their fleets, intensified schedules and improved reliability. In terms of seat-miles, the local carriers have increased service five-fold in the past decade.

STUART G. TIPTON

Patronage has increased at an even greater rate — a gain of more than 700 per cent in passenger miles. Last year, over four million people chose to fly local airlines — twice the 1953 volume, or nine times that of 1948, or three and a half times the number carried by the entire domestic industry in 1938.

And last year's mail volume was four and a half times that of 1948. Air express and freight tonnage showed an eight-fold gain.

At the same time, efficiency has improved markedly. Boardings per station have quadrupled. Load factor has risen from 27.4 per cent in 1948 to 45.7 in 1957. And despite spiraling costs in practically all categories, expenses per available seat-miles have been held down to a slight rise of only two per cent in 10 years.

Related, as it properly should be, to growth in service and traffic volume, public service revenue is accomplishing its purpose with growing effectiveness. The percentage of public service revenue to total revenues has shrunk from 75 per cent in fiscal 1948 to 34 per cent currently.

This progress has been achieved in the face of seemingly insurmountable obstacles. For the most part, local airline cities are small, off the federal airways and an average of less than 70 miles apart. All this imposes increased costs, greater competition and reduced revenues, which — together with inadequate and delayed public service compensation — add up to a starvation diet.

With a mission to fulfill, the local carriers have pioneered uncharted routes, installed their own navigation facilities, developed special ground techniques, experimented with schedules, improved aircraft efficiency and promoted vigorously within grossly limited sales budgets.

During this period, the public has been the sole beneficiary — certainly not the employes who have invested their talents and energy, not the stockholders who have invested their funds.

Now the Civil Aeronautics Board says it seeks greater things of them. The Board can expect faster improvement only to the extent that the Board itself improves its own methods of operation and its policies.

Any new regulatory approach must reflect the letter and the spirit of the Civil Aeronautics Act. This legislation charges the Board explicitly with the affirmative responsibility of promoting the development of a sound U. S. air transport system.

A re-affirmation of the intent of Congress would have salutary effects upon the other segments of the industry as well — with finer public service the end result.

Capital For Local Service Airlines

Recognizing their problems, a specialist finds the locals attractive for growth

By EDWARD McCORMICK BLAIR
Partner, William Blair & Company, Chicago

ONE gets an odd feeling of power in being able to read the balance sheet of a local service airline, and not be scared by it. The same is true for the income statement. In some twelve years the industry, which started in poverty, still finds itself poverty-stricken. At least that description is true if one could say that the industry's ability to borrow large amounts of money is based on its dear old rich Uncle's guarantee. However, please don't misunderstand me. This article is written with a real appreciation of the fact that the local service airlines, today 13 in number, grew at a rate since the war probably exceeding any other industry in America without a default in the payment of principal or interest on their debt. The basic governmental guidance and sympathy through the postwar years, along with the ability and vision of a number of men and women working very hard, often with fairly crude tools, have created an important segment of the transportation industry.

The real concern to me is how capital, one of the basic tools for growth, can be made available in sufficient amounts to the local service airlines. Capital, in the form of equity or loans, will be as necessary for growth as able management, the employes, and competitive equipment, which are all the flesh and blood of an airline. A good airline should have a blend of all and an access to all. So with a bow to the employes and management, I would like to restrict myself to finance.

At the present time the local service airlines have access to capital largely through debt. Two laws have recently been passed, one of which permits the Civil Aeronautics Board to guarantee 90% of loans up to $5,000,000 for any one airline for the purchase of new equipment, and another which exempts from recapture for the reduction of subsidy capital gains on the sale of used equipment if the proceeds are invested in new flight equipment. Both of these laws are necessary for the local service airlines to supply the service demanded by the public.

The big surprise, however, is that over the short life of the industry, nearly half its capital has been supplied by those who sell to it, including airports, oil companies, and other suppliers. During the past two years, its current liabilities have substantially exceeded its current assets. Technically the industry could be called bankrupt.

One can admire the agility of a company that can exist a year or two with its current liabilities exceeding its current assets. But it was most surprising to find that this whole segment of a growth industry has existed for two years with the following negative current ratios:

(in thousands)	Dec. 31 1956	Sept. 30 1957
Current Assets	$14,873	$14,722
Current Liabilities	17,431	20,007
Long Term Debt	7,800	8,408
Stockholders Equity and Preferred Stock	12,173	10,221

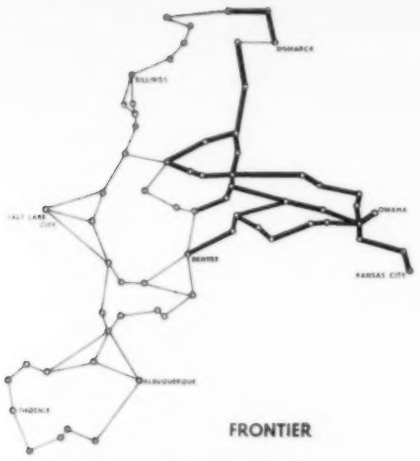
To correct the industry balance sheet so that the local service airlines have a current position comparable to the trunk airlines, the current liabilities should be reduced by $9,000,000. This can be done only by placing the local service airlines in a position to attract long-term capital. Mind you the $9,000,000 is merely to put the industry's house in order; it is not to finance new equipment or route expansion.

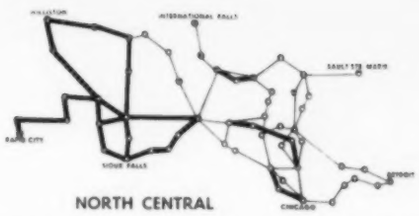
In considering the problem of how to attract capital to any industry, it should be kept in mind that those who loan money, and also to a large part those who invest money, respond to normal competitive influences. Capital is available in a market but the market is competitive. Other public utilities such as the trunk airlines are in the market, as are the power companies, automobile companies, home owners and literally hundreds of other industries. If local service airlines are to enter the money market they must be competitive, which will not be easy. Local service airlines are hampered in today's money market for three basic reasons:

(a) There are only 13 local service airlines in contrast to the thousands of manufacturing or commercial establishments. Lenders and investors have developed over many years basic comparisons for judging the relative values inherent in specific companies or industries. When there are only 13 companies in an industry, only a limited number of lenders or investors are educated to their problems. Therefore, the local service story must be particularly clear and logical when told to a potential lender or investor. That is the only way the capital market can be broadened for local service airlines. Potential investors have to understand clearly what I call the rules of the game.

(b) The local service airline segment of the air transportation industry has grown at a tremendous rate. Since the war the industry has grown 6 times or 10 times, depending on what statistics one wishes to use. In the last 5 years the most conservative statistics show a doubling in size. To double in size in five years a company must grow approximately 16% a year. Contrast this with the annual increase in the Federal Reserve Board index of production for the nation for all goods of 4% a year for the last 5 years. A lender or investor looks with great interest at a growth company or a growth industry as a place to put money to work. But he also realizes an extraordinary rate of growth also brings many problems and headaches that require the best management. Management particularly must be able to look ahead as far down the road as possible. Paramount is a clear understanding and presentation of the govern-

(Continued on page 78)





Boid lines on these maps represent 8,000 miles of new routes added to three local service airlines in the Seven States Area Case last month, the lighter lines showing their existing systems.

(Maps by E. H. Pickering and Margaret Adams.)

CAB Launches Route Expansion

Seven-States action sets trend with 8,000 miles and 53 cities added to 3 locals

NOT since the last local service airline was created back in 1949 has the CAB made a decision that has added so much to the route pattern of the industry as it did just last month in announcing its decision in the Seven States Area Local Service Investigation. In this one case the Board added 33% to the local service mileage of the nation by awarding nearly 8,000 new miles, split three ways among Frontier, North Central, and Ozark. Fifty-six new cities were added to receive local airline service (although 12 of these had been receiving temporary service as a result of expedited proceedings pending decision in the Seven States Case.)

Of the 56 new cities, 25 will be receiving their first airline service and 45 will receive local service exclusively. Involved are 24 trunk line suspensions with 19 cities being transferred entirely from trunk to local service.

Measuring from an aeronautical chart (pending word on official mileages) indicates that Ozark received 2,689 new and unduplicated route miles involving 19 additional cities. Frontier was awarded 2,653 new and unduplicated net miles involving 26 new cities. North Central has had 2,304 unduplicated new miles added involving service to 21 additional cities. The awards make these three carriers the largest of the 13, Frontier leading with about 6,300 route miles, Ozark second with 5,700 and North Central third with about 5,000. Trans-Texas, which had previously been Number One, is now trailing in fourth place with 3,800 miles.

The Seven States Case is the first of eleven such area cases involving improvement and extensions of local air service in the U. S. These eleven cases will cover practically all of the U. S. If the Seven States Case is indicative, the local air service network is due for expansions that will more than double route mileage, cities served and, quite possibly, the subsidy needs of the local air industry.

The accompanying maps give some indication of the extent of the awards to the three airlines involved. The heavy lines indicate the new awards, the light lines indicate the routes of the carriers before expansion.

Although the term "use it or lose it" has been bandied about the industry for many years, it was used in an official Board pronouncement for the first time. The press release announcing the decision (the official version of which may not be released for a month or more) stated that the services being awarded were on a "use it or lose it" basis. The Board is allowing both carriers and cities a six-month development period after which a year of service will become the basis for indicating whether review with an eye toward elimination will be instituted. Specifically, the Board stated that the record of each city between the seventh and eighteenth months of service must show an average of 5 boarding passengers per day to avoid immediate review, and that average loads on board over the various route segments must average between five and seven passengers to avoid possible schedule suspension. Only unusual circumstances are to be considered as reasons for not suspending any operations falling below these figures.

Route awards as set forth in press release by the Board are as follows:

FRONTIER AIRLINES—Denver-Rapid City, permanent; Casper-Bismarck, temporary; Williston-Bismarck, temporary; Southern Nebraska Route, temporary; Central Nebraska Route, permanent; Northern Nebraska Route, temporary, and Omaha-Kansas City Route, permanent.

OZARK AIRLINES—Des Moines-Milwaukee, temporary; Quad Cities-Twin Cities, permanent; Des Moines-Twin Cities, permanent; Sioux City-Chicago, permanent; Chicago-Sioux City/Omaha, permanent; Des Moines-Chicago, temporary; Kansas City-Quad Cities, temporary; Amended Kansas City-Chicago (Moberly, Mo., added), temporary; St. Louis-Quincy, Ill.-Hannibal, Mo., temporary; Omaha-Sioux Falls, permanent; Sioux Falls-Waterloo, temporary.

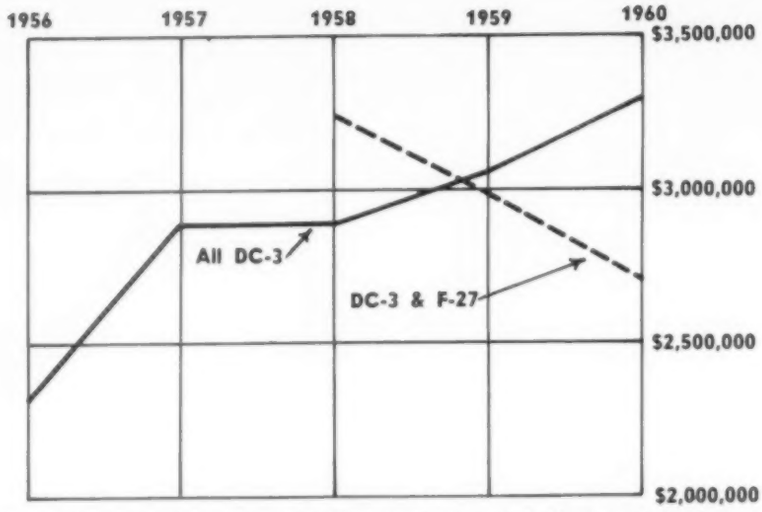
NORTH CENTRAL AIRLINES: Minot-Sioux Falls, permanent; Grand Forks-Minot, temporary; Rapid City-Twin Cities, temporary; Sioux Falls-Twin Cities, permanent; Grand Forks-Sioux Falls, temporary; Madison-Rockford-Chicago, temporary; Twin Cities-Milwaukee, permanent; Ashland added between Ironwood and Duluth, permanent.

Cities suspended from trunk airlines were as follows, by airlines:

FROM BRANIFF AIRWAYS: Minot, Bismarck, Aberdeen, Watertown, Huron, Fort Dodge, Mason City, Moline, Burlington, Ottumwa, Quincy, St. Joseph, Lincoln and between Sioux City and Des Moines.

FROM WESTERN AIRLINES: Rochester, Mankato, Brookings, Spearfish, Hot Springs, Chadron, Alliance and Scottsbluff.

FROM UNITED AIRLINES: Scottsbluff, North Platte, Grand Island and Iowa City.



Comparison of mail pay and subsidy total dollars, including earnings element.

Carrier Considerations In Selecting The F-27

By T. H. DAVIS
President, Piedmont Airlines

THE biggest problem which has heretofore confronted the local service airline industry is the lack of a modern, efficient airplane designed specifically for short-haul operation. Happily, within the next few months such an airplane will be available and, while the airplane alone cannot be expected to solve all of our problems, it certainly will put us in a better position than ever before to succeed and reduce our subsidy requirement.

The DC-3 has been the basic type of equipment used in local service airline operation because (1) it was available in large numbers at bargain-basement prices when the local service airlines first began their operations, and (2) its ratio of total operating cost to attainable commercial revenue was more favorable than was the case with any other available airplane for short-haul service. It has served its purpose well, even though it was not originally designed for short-haul airline operation as we know it today.

Basic Requirements

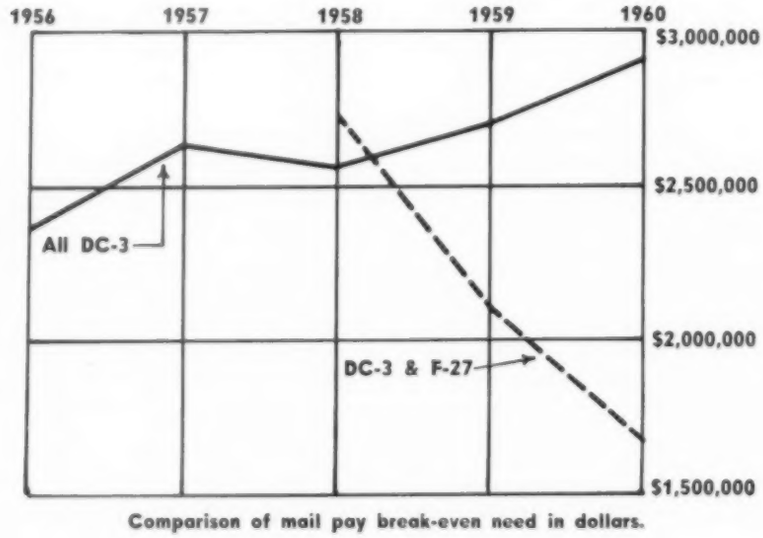
Historically, airline operators have had many different views as to what the ideal airplane for a given type of operation should be like and look like. In the case of the ideal local service airplane, however, there has been perhaps more universal agreement than ever before. During 1950, under the sponsorship of the Air Transport Association and the Conference of Local Airlines, an extensive study and survey was conducted from which emerged the basic requirements and desires of all local service airlines. The finally accepted specification was universally adopted. The principal requirement for the DC-3 replacement called for an airplane having a seating capacity of from 32-40 passengers; ability to operate into and out of relatively small airports; constructed so as to permit loading of passengers and cargo without the use of stands, ladders, conveyors or other ramp equipment; cruise as fast as possible consistent with the other requirements but in no case less than 225 mph., and pressurization to permit rapid climb and descent.

Of course, the real basic requirement in any airplane, in addition to safety, is good economics. All of the features listed above affect economics to varying degrees but there are other factors having a greater influence on economics such as type of power plant, design, maintenance features and others. The specifications agreed to by the local service airlines intentionally left all of this area of judgement to the greater knowledge and skill of the manufacturer.

Key to Successful Operation

In the final analysis, however, the only question an airline operator must ask himself when he looks for a new airplane is "Will it operate safely and profitably at reasonably attainable load factors?" Admittedly, that question covers a broad area. It is the summary of all other considerations. It is the key to successful airline operation whether long-haul, short-haul, helicopter, jet space ship or anything else. This key requirement is commonly expressed in terms of break-even load factor, or seat-mile costs. If these two factors are not lower than those experienced with present equipment, an airline would be well advised not to buy a new airplane.

Unfortunately, for the local service airline industry this factor is an extremely difficult one to control because of the limited size of airplane we can afford to operate over our routes. For example, a very large percentage of total seat-mile revenue is required to defray crew costs alone. *Three of the 21 seats available in the standard DC-3 must be occupied by fare-paying passengers all of the time just to take care of this single cost item.* This fixed expense is far greater percentagewise than is the case for a 70-passenger DC-6 and fantastically greater as compared to a 600-passenger train.



Comparison of mail pay break-even need in dollars.

Local Service Problem

As operating costs have gone up in the trunkline industry, the manufacturers have come forward with larger, faster airplanes in order to keep break-even load factors and seat-mile costs within reasonable bounds. That is the only way the trunklines have been able to stay in business with no fare increases and no subsidy. The local service carriers, however, are confronted with a more difficult problem. Because of the short haul nature of our operations, and the relatively low traffic potential of the cities we serve and the many small airports on our system, we cannot utilize these larger types of aircraft.

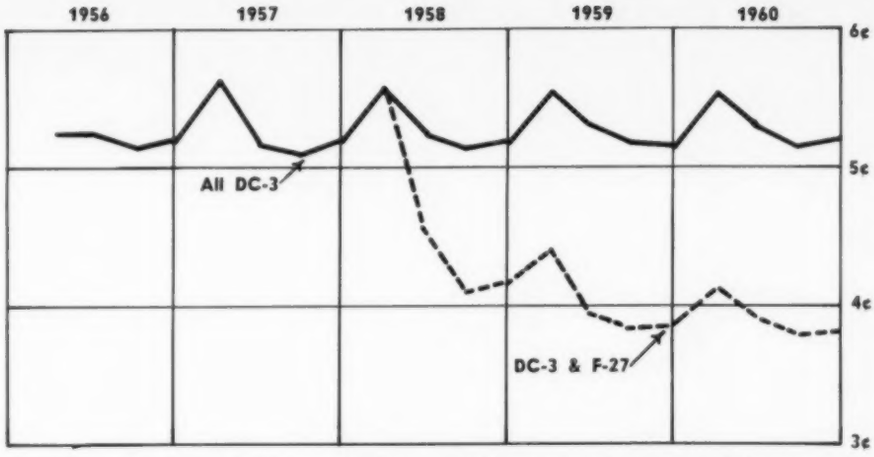
The local service carriers, therefore, have the problem of reasonable seat-mile costs and *in addition* the problem of total per plane-mile operating costs. It is fairly easy to get low seat-mile costs by using bigger airplanes with a lot of seats. But if the airplane is so big that you can't fill but a fraction of those seats most of the time the low seat-mile cost is meaningless.

It is our feeling that, as a general rule, the saturation load factor on an annual basis for the typical local service airline is on the order of 55 to 60%. When load factors higher than this are realized a lot of passengers are being turned away, especially on peak traffic days. *Under such conditions a carrier is not rendering good service to the public.* Therefore, we made exhaustive studies of all available aircraft which might make it possible for us to come as close as possible to the optimum ratio of seat-mile cost/per plane-mile cost.

In addition to these requirements, we at Piedmont had other requirements on which we insisted before placing an order for a new airplane. It must be able to operate fully loaded from every airport on our system without asking the cities to extend runways. Several of our airports are so small and in mountainous terrain that Convair type equipment could not be used. We do not want to be forced to operate two types of equipment. It must have turbine power. It must be pressurized, and the major cargo compartment must be in one location to assure rapid loading. Only the F-27 met all of these requirements.

Basis of Forecasts

Our traffic and cost projections were all made by our own staff. These results were, however, compared with other F-27 forecasts made by independent consultants for the manufacturer and other airlines. In each instance our forecasts indicated slightly higher operating costs than those prepared by others. Nevertheless, and even though our seat-mile costs are computed on a 36-seat basis rather than a 40-seat basis, we arrived at very satisfactory results, as can be seen from the accompanying charts.



Comparison of operating expenses per available seat mile expressed in cents per mile by quarters.

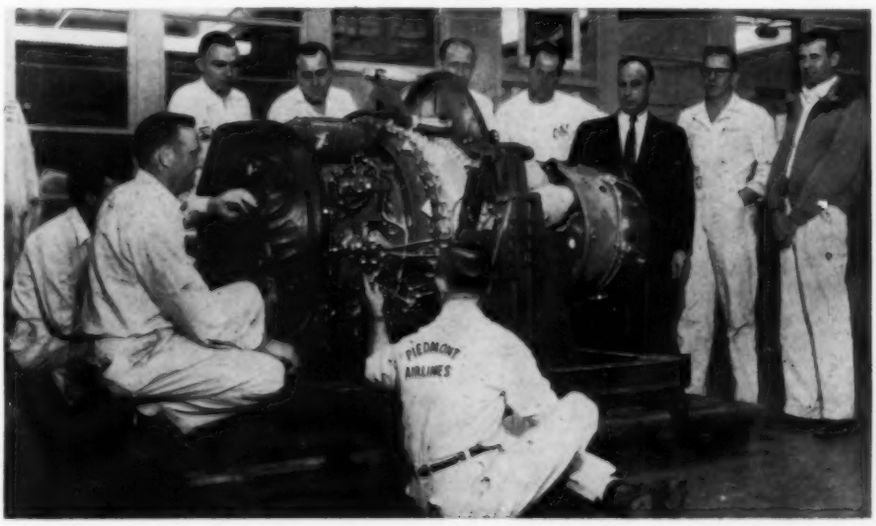
Engine operating and maintenance cost projections were based on information supplied by other airlines using Rolls-Royce Dart Engines.

Airframe operating and maintenance cost were based on experience of other carriers using smaller-type, modern, pressurized equipment and our own experience. Annual cost increases have been forecast for labor and material based on prior experience. Of course, pre-operating expenses such as pilot and mechanic training, promotion and advertising, and administrative expense have been added to these costs.

Future traffic growth projections were based on two basic factors. First,

(Continued on page 102)

Piedmont Airlines has conducted extensive ground school courses in maintenance and servicing of Fairchild F-27 propjets preparatory to placing the new Fairchilds in operation.



Ten Leading Cities Served by Eac

IN PASSENGERS BOARDED (OF ALL CITIES SERVED):

	ALLEGHENY		BONANZA		CENTRAL		FRONTIER		LAKE CENTRAL		MOHAWK		NORTH CENTRA	
1.	New York	69,780	Phoenix	37,652	Dallas	14,886	Denver	38,559	Chicago	24,414	New York	114,551	Chicago	205,93
2.	Pittsburgh	67,673	Las Vegas	31,246	Fort Smith	13,618	Grand Junction	18,154	Indianapolis	18,572	Binghamton	48,262	Milwaukee	91,92
3.	Harrisburg	33,876	Los Angeles	19,501	Kansas City	8,532	Salt Lake City	17,851	Columbus	16,001	Utica	45,865	Minneapolis	52,524
4.	Scranton	29,655	El Centro	11,478	Oklahoma City	7,801	Phoenix	17,266	Cleveland	9,085	Ithaca	28,370	Detroit	38,102
5.	Washington	28,167	Yuma	10,057	Tulsa	6,369	Albuquerque	16,185	South Bend	8,346	Syracuse	26,068	Madison	27,412
6.	Erie	26,427	Reno	8,623	Fayetteville	5,905	Farmington	15,607	Lafayette	8,322	Buffalo	25,120	Duluth	26,584
7.	Bradford	26,252	San Diego	7,459	St. Louis	5,665	Flagstaff	8,202	Mansfield	8,206	Elmira	24,502	Green Bay	24,540
8.	Williamsport	20,365	Ontario	6,665	Little Rock	5,626	Billings	6,891	Youngstown	7,222	Boston	23,216	South Bend	19,079
9.	Parkersburg	19,121	Santa Ana	4,700	Joplin	5,306	Durango	6,057	Lima	6,632	Rochester	14,614	Kalamazoo	18,963
10.	Atlantic City	14,689	Prescott	2,506	Lawton	5,103	Pueblo	5,865	Terre Haute	6,326	Albany	12,249	Oshkosh	16,562

IN PASSENGERS BOARDED (AT CITIES SERVED EXCLUSIVELY BY LOCAL SERVICE AIRLINES):

1.	Bradford	26,252	El Centro	11,478	Fayetteville	5,905	Farmington	15,607	Lafayette	8,352	Utica	45,865	Duluth	26,584
2.	Johnstown	9,140	Yuma	10,057	Ponca City	3,133	Flagstaff	8,202	Mansfield	8,206	Ithaca	28,370	Green Bay	24,540
3.	Philipsburg	8,120	Santa Ana	4,700	Enid	2,923	Durango	6,057	Lima	6,632	White Plains	5,043	Kalamazoo	18,963
4.	Altoona	6,225	Indio	1,701	Liberal	2,249	Cortez	4,809	Danville	4,542	Ogdensburg	1,613	Oshkosh	16,562
5.	Jamestown	6,079	Blythe	1,579	Borger	2,242	Riverton	4,665	Kalamazoo	3,073			Battle Creek	14,479
6.	Franklin	4,326	Kingman	1,493	Duncan	1,585	Montrose	3,243	Kokomo	3,033	No Others Served		Wausau	11,400
7.	Hagerstown	3,572	Apple Valley	1,276	Paris	1,466	Winslow	3,112	Marion, Ind.	2,457	Exclusively		Beloit	7,797
8.	Salisbury	3,482	Riverside	1,217	Muskogee	1,384	Vernal	2,933	Bloomington	2,044			Stevens Point	5,849
9.	Hazelton	2,141	Tonopah	589	Harrison	1,076	Alamosa	2,798	Marion, Ohio	1,989			La Crosse	5,726
10.	Dover	2,073	Hawthorne	439	Sherman	780	Gallup	2,795	Zanesville	1,619			Rhinelander	5,532

IN AVERAGE NUMBER OF PASSENGERS BOARDED PER AIRCRAFT DEPARTURE:

1.	New York	15.45	Reno	11.84	Kansas City	10.73	Denver	14.20	Chicago	14.07	New York	20.12	Chicago	15.21
2.	Washington	12.39	Las Vegas	10.81	St. Louis	8.78	Albuquerque	11.12	Pittsburgh	9.51	Poughkeepsie	16.44	Minneapolis	9.88
3.	Pittsburgh	11.31	Phoenix	10.44	Denver	8.59	Salt Lake City	9.88	Cleveland	9.13	Detroit	11.73	Omaha	7.30
4.	Cleveland	10.08	Los Angeles	8.94	Little Rock	8.09	Phoenix	9.50	Columbus	6.88	Boston	11.23	Duluth	7.04
5.	Detroit	8.69	El Centro	5.34	Oklahoma City	4.38	Grand Junction	5.97	Grand Rapids	5.95	Watertown	10.22	Milwaukee	6.61
6.	Buffalo	7.16	Yuma	4.61	Wichita	4.05	Billings	5.44	Youngstown	5.88	Binghamton	7.52	Detroit	6.19
7.	Atlantic City	6.70	Ontario	3.73	Lawton	3.87	Tucson	5.44	Indianapolis	5.60	Buffalo	6.82	Madison	5.96
8.	Huntington	6.54	San Diego	3.51	Tulsa	3.82	Flagstaff	4.19	Cincinnati	5.25	Ithaca	6.66	Internatl. Falls	5.35
9.	Scranton	6.08	Apple Valley	2.43	Dallas	3.81	Farmington	3.86	Terre Haute	4.58	Utica	6.31	Kalamazoo	4.86
10.	Harrisburg	6.07	Santa Ana	2.32	Fort Smith	3.57	Durango	3.31	Detroit	4.44	Ogdensburg	6.15	South Bend	4.69

1957 Traffic Record of Cities Served by Local Service Airlines

(Ranked in Order by Number of Boarding Passengers; Compiled by FLIGHT MAGAZINE from CAB Records)

NOTE: AL, Allegheny; BL, Bonanza; CN, Central; FL, Frontier; LC, Lake Central; MO, Mohawk; NO, North Central; OZ, Ozark; PC, Pacific; PI, Piedmont; SO, Southern; TT, Trans-Texas; WC, West Coast. Note change of name of Southwest to Pacific. Where more than one local airline is indicated as serving a city, the first carrier listed boarded the greatest number of passengers, the second listed boarded the second greatest number, etc. * Indicates a city served exclusively by one or more local service airlines. (1) Local service operations were inaugurated during 1957. (2) Termination of Service during 1957. (3) Seasonal service. (4) A major change in service pattern which strongly influenced boardings. (5) City named is one of two or more cities designated for service through a joint airport. (6) New York is served by local service airlines through Newark airport.

Rank 1957	Rank 1956	City and State	Carrier	Passengers Boarded 1957	Passengers Boarded 1956	Percent Change 1956/57	Passengers Boarded Per Departure
1	1	Chicago, Ill.	NO, OZ, LC	331,724	287,053	15	15.00
2	2	New York, N. Y.	MO, AL	184,331	159,372	15	18.06
3	3	Milwaukee, Wis.	NO, OZ	96,345	87,738	9	6.64
....	....	Los Angeles-Burbank, Calif.	PC, BL	87,503	67,820	29	12.05
....	....	San Francisco-Oakland, Calif.	PC	79,816	70,582	13	8.02
4	6	Los Angeles, Calif.	PC, BL	77,904	59,440	31	14.14
5	5	San Francisco, Calif.	PC	74,000	64,572	14	10.85
6	4	Pittsburgh, Pa.	LC, AL	73,401	65,884	11	11.15
....	....	Dallas-Fort Worth, Tex.	TT, CN	70,065	71,289	— 2	3.89
7	21	Detroit, Michigan	NO, MO, LC, AA	65,013	31,913	103	6.92
8	9	Washington, D. C.	PI, AA	62,590	47,737	31	14.49
9	12	Minneapolis, Minn. (4)(5)	OZ, NO	60,069	42,672	40	10.01
10	7	Dallas, Texas	TT, CN	58,556	56,658	3	5.67
11	8	Phoenix, Ariz.	FL, BL	54,918	48,568	13	10.13
12	13	St. Louis, Mo.	OZ, CN	53,230	42,431	25	9.61
13	16	Atlanta, Ga.	SO	50,915	38,961	30	13.62
14	10	Binghamton, N. Y. (5)	MO	48,262	43,817	10	7.52
15	15	*Utica, N. Y. (5)	MO	45,865	39,983	14	6.31
16	11	Cincinnati, Ohio	PI, LC	44,740	43,081	3	12.07
17	18	Denver, Colo.	FL, CN	41,118	34,496	19	13.63
18	20	Seattle, Wash.	WC	39,460	33,597	17	11.17
19	31	Peoria, Ill.	OZ	36,186	25,925	39	5.98
20	37	Erie, Pa.	AA, MO, LC	35,239	22,225	58	4.22
21	14	Bristol, Tenn. (5)	PI	35,232	42,349	—17	9.13
22	24	Portland, Ore. (5)	WC	34,549	29,538	16	9.17
23	49	Harrisburg, Pa. (4)	AA	33,870	19,249	75	6.07
24	19	Buffalo, N. Y. (5)	MO, AA, LC	33,653	34,429	— 3	6.65
25	38	Las Vegas, Nev. (4)(5)	BL, PC	33,480	22,202	51	10.58
26	17	Roanoke, Va.	PI	32,233	36,625	—12	3.87
27	27	Scranton, Pa. (5)	AL	29,655	27,304	8	6.08
28	28	Memphis, Tenn.	SO, TT	29,384	27,202	8	9.25
29	25	*Rockford, Ill.	OZ	29,161	28,194	3	6.93
30	30	Louisville, Ky.	PI, OZ	28,990	26,009	11	11.65
31	40	Monterey, Calif. (5)	PC	28,980	21,093	37	9.65
32	32	Houston, Tex.	TT	28,874	24,965	15	9.10
33	23	*Ithaca, N. Y.	MO	28,370	30,105	— 6	6.66
34	35	Columbus, Ohio	LC, PI	28,101	23,821	17	7.86
35	29	Madison, Wis.	NO	27,812	26,090	6	5.96
36	33	South Bend, Ind.	NO, LC	27,424	24,086	13	4.59
37	26	*Eureka, Calif. (5)	PC	27,403	28,145	— 3	9.36
38	42	*Duluth, Minn. (5)	NO	26,584	20,850	27	7.04
39	34	*Bradford, Pa.	AL	26,252	23,935	9	3.96
40	58	Syracuse, N. Y. (4)	MO	26,068	14,568	78	5.94
41	45	*Green Bay, Wis.	NO	24,540	20,098	22	2.81
42	43	Elmira, N. Y. (5)	MO	24,502	20,493	19	5.71
43	46	Springfield, Ill.	OZ	23,690	20,091	17	3.80
44	41	Boston, Mass.	MO	23,216	20,886	11	11.23
45	54	*San Jose, Calif. (5)	PC	22,568	16,372	37	5.96
46	44	Indianapolis, Ind.	LC, OZ	22,184	20,153	10	6.05
47	50	*Kalamazoo, Mich.	NO, LC	22,036	19,166	14	3.92
48	36	Charlotte, N. C.	PI, SO	21,411	23,012	— 7	6.84
49	22	Cleveland, Ohio	AL, LC	21,282	30,766	—31	9.65
50	39	Richmond, Va.	PI	21,003	21,378	— 2	4.91
51	47	Huntington, W. Va. (5)	PI, AL	20,785	20,085	3	4.51
52	53	Williamsport, Pa.	AL	20,365	16,473	23	4.12
53	65	Parkersburg, W. Va. (5)	AL, PI	19,121	14,096	35	3.88

Traffic Growth At 380 Stops

By E. H. PICKERING

AN indication of increasing industry stability is apparent from a study of the traffic development at the 380 cities served by local service airlines during 1957. Total traffic was up 19% in 1957 compared to 21% in 1956. Emphasis was on general growth of an over-all nature, though, and less on the effect of expanding route services, which has been the predominant factor in past years.

In other words, the growth consists of a more evenly divided expansion of traffic at many cities rather than extreme growth at a handful of outstanding cities. For example, growth at major cities such as Chicago, New York, San Francisco, Pittsburgh, Washington was not as spectacular as in previous years, yet none of these cities was affected by new routes this year, such as in past years contributed to their more spectacular rises. Fewer drastic shifts in ranking of the cities in traffic boardings is another feature of the settling-down of the industry as it grows in stature.

In 1957 there were 52 cities which boarded over 20,000 passengers each, up five from 1956. There were 98 cities boarding over 10,000 passengers, up 10 from 1956. The top 50 cities in 1957 boarded 17% more traffic than did the top 50 in 1956. Among

Each Local Service Airline

OZARK		PACIFIC		PIEDMONT		SOUTHERN		TRANS-TEXAS		WEST COAST		Avg. All Carriers	
Chicago	101,716	San Francisco	74,000	Cincinnati	39,777	Atlanta	50,915	Dallas	44,670	Seattle	39,460	1.	65,844
St. Louis	47,565	Los Angeles	58,403	Bristol	35,232	Memphis	21,342	Houston	28,874	Portland	34,549	2.	39,644
Peoria	36,186	Monterey	28,980	Washington	34,423	Monroe	11,619	San Antonio	17,531	Yakima	17,194	3.	26,182
Rockford	29,161	Eureka	27,403	Roanoke	32,233	New Orleans	11,424	Beaumont	16,682	Boise	16,952	4.	21,224
Springfield	23,690	San Jose	22,568	Richmond	21,003	Columbus, Ga.	10,639	Shreveport	9,465	Pasco	13,337	5.	17,200
Moline	14,518	Sacramento	17,974	Louisville	19,591	Greenville	8,465	McAllen	9,269	North Bend	12,828	6.	15,325
Champaign	13,800	Bakersfield	13,252	Charlotte	19,035	Jackson	7,283	Tyler	8,731	Spokane	11,257	7.	13,706
Decatur	12,702	Santa Barbara	12,217	Charleston	16,237	Columbus, Miss.	6,525	Fort Worth	8,402	Lewiston	10,548	8.	11,976
Paducah	9,660	Burbank	9,599	Norfolk	15,773	Jacksonville	6,514	Corpus Christi	8,186	Walla Walla	10,219	9.	10,411
Louisville	9,399	Redding	8,072	Charlottesville	14,614	Baton Rouge	6,144	Harlingen	8,114	Medford	8,035	10.	9,052
Rockford	29,161	Eureka	27,403	Charlottesville	14,614	Greenville	8,465	McAllen	9,269	Pasco	13,337	1.	18,637
Champaign	13,800	San Jose	22,568	Lynchburg	12,641	Columbus	6,525	Tyler	8,731	North Bend	12,828	2.	12,978
Decatur	12,702	Redding	8,072	Bluefield	8,104	Tuscaloosa	5,367	Harlingen	8,114	Lewiston	10,548	3.	8,180
Columbia	6,632	Chico	6,293	Kinston	4,227	Gadsden	5,219	Longview	7,418	Port Angeles	7,619	4.	5,777
Jefferson City	4,066	Crescent City	4,890	Hickory	3,216	Natchez	3,849	Laredo	4,846	Pullman	6,523	5.	4,959
Bloomington	4,045	Oxnard	4,836	Beckley	2,671	Athens	3,806	Victoria	4,777	Wenatchee	6,253	6.	4,289
Burlington	3,822	Santa Maria	4,540	London	1,621	Moultrie	2,882	Texarkana	4,508	Hoquiam	6,054	7.	3,592
Dubuque	3,675	Paso Robles	3,988	Myrtle Beach	1,542	Tupelo	2,687	Pine Bluff	2,718	Astoria	4,647	8.	3,014
Marion, Ill.	2,687	Santa Rosa	2,987	Southern Pines	1,015	Vicksburg	2,313	Lufkin	2,135	Roseburg	4,200	9.	2,388
Cape Girardeau	2,547	Marysville	2,880	Morehead City	453	Eglin AFB	1,916	El Dorado	2,121	Ephrata	3,956	10.	2,259
Chicago	14.84	Los Angeles	17.54	Washington	16.81	Atlanta	13.62	Memphis	9.77	Seattle	11.17	1.	14.25
Minneapolis	11.06	San Francisco	10.85	Cincinnati	14.40	Memphis	9.07	Houston	9.10	Port Angeles	11.07	2.	11.11
Louisville	10.53	Monterey	9.65	Louisville	12.12	Eglin AFB	8.78	Dallas	6.96	Boise	9.36	3.	9.67
Indianapolis	10.32	Eureka	9.36	Columbus, Ohio	9.68	New Orleans	8.66	Beaumont	6.76	Portland	9.17	4.	8.90
St. Louis	9.72	Las Vegas	8.15	Bristol	9.13	Panama City	7.20	Lafayette	5.37	North Bend	6.59	5.	7.18
Kansas City	7.43	Medford	7.03	Charlotte	7.64	Monroe	6.95	McAllen	5.34	Idaho Falls	5.94	6.	6.24
Milwaukee	7.26	San Jose	5.96	Norfolk	7.33	Jacksonville	6.47	Laredo	5.13	Medford	5.74	7.	5.87
Rockford	6.93	Sacramento	5.76	Knoxville	7.07	Mobile	5.39	San Angelo	4.95	Spokane	5.02	8.	5.44
Nashville	6.56	Santa Barbara	5.58	Myrtle Beach	5.29	Gulfport	4.54	San Antonio	4.00	Klamath Falls	4.86	9.	4.96
Peoria	5.98	Burbank	5.49	Wilmington, N.C.	5.29	Jackson	4.36	Shreveport	3.96	Wenatchee	4.70	10.	4.64

—(FLIGHT MAGAZINE Compiliation. Source: Airline Reports to CAB.)

cities served exclusively by the locals, nine boarded over 20,000 passengers, two more cities than achieved that level in 1956. The top 50 cities served exclusively by the locals in 1957 boarded 7% more traffic than the comparable top 50 did in 1956.

Chicago again heads the list for local air traffic boardings and becomes the first city to board over 300,000 local service passengers in a single year. Detroit, the only city in the nation to be served by four local service airlines, showed an outstanding traffic increase and rose from 21st ranking in 1956 to 7th in 1957 by more than doubling its boardings.

Disparity in the relative strength of local service route systems is pointed up by the comparisons of the ten top cities in three categories for each of the 13 locals. The top boarding city alone on several of the systems boards more traffic than all top ten of others.

During 1957 service was terminated at four cities while 19 had service inaugurated for a net gain of 15 to raise the total served from 365 in 1956 to 380. Those added were: Cedar Rapids, Hazleton (Penna.), Rochester (Minn.), Eglin Air Force Base (Fla.), Ogdensburg (N. Y.), Fargo, Portsmouth (Ohio), Apple Valley (Calif.), Norfolk (Neb.), Harrison (Ark.), Sioux Falls, Toledo, Guymon (Okla.), Watertown (S. D.), Palmdale (Calif.), Brookings (S. D.), Lamar (Colo.), Yankton (S. D.), and Omaha. Service was terminated at Woodward (Okla.), Coleman (Tex.), Cairo (Ill.), and Gary (Ind.).

Only two new names show up in the top 50 listing in 1957 that were not included in the 1956 list — Syracuse, N. Y. and San Jose, Calif.,

Rank 1957	Rank 1956	City and State	Carrier	Passengers Boarded 1957	Passengers Boarded 1956	Percent Change 1956/57	Passengers Boarded Per Departure
54	66	Grand Junction, Colo.	FL	18,154	14,009	29	5.97
55	59	Sacramento, Calif.	PC	17,974	14,512	23	5.76
56	55	Salt Lake City, Utah	FL	17,851	15,953	11	9.88
57	64	San Antonio, Texas	TT	17,531	14,106	24	4.00
58	72	Yakima, Wash.	WC	17,194	12,855	33	3.11
59	60	Boise, Idaho	WC	16,952	14,499	16	9.36
60	63	Beaumont, Texas (5)	TT	16,683	14,113	18	6.76
61	52	Oshkosh, Wis.	NO	16,562	16,494	0	3.33
62	48	Charleston, W. Va.	PI	16,237	19,970	—19	3.17
63	79	Albuquerque, N. Mex.	FL	16,185	11,906	35	11.12
64	56	Norfolk, Va.	PI	15,773	15,527	1	7.33
65	94	*Farmington, N. Mex.	FL	15,607	9,214	69	3.86
66	61	Medford, Ore.	WC, PC	15,486	14,443	7	6.30
67	51	Atlantic City, N. J.	AL	14,689	17,937	—19	6.70
68	68	*Charlottesville, Va.	PI	14,614	13,742	6	3.33
69	74	Rochester, N. Y.	MO	14,614	12,734	14	3.93
70	102	Moline, Ill. (4) (5)	OZ	14,518	8,537	70	5.07
71	77	*Battle Creek, Mich.	NO	14,479	12,227	18	3.82
72	71	*Champaign, Ill. (5)	OZ	13,800	13,047	5	4.31
73	73	Ft. Smith, Ark.	CN	13,618	12,768	6	3.57
74	78	Philadelphia, Pa. (5)	AL	13,510	12,086	11	5.95
75	83	*Pasco, Wash. (5)	WC	13,337	10,941	21	3.50
76	62	Fayetteville, N. C.	PI	13,309	14,219	— 7	4.37
77	133	Bakersfield, Calif.	PC	13,252	6,482	104	4.73
78	84	Kansas City, Mo.	CN, OZ	13,206	10,921	20	9.27
79	75	*North Bend, Ore. (5)	WC	12,828	12,332	4	6.59
80	81	*Decatur, Ill.	OZ	12,702	11,133	14	3.94
81	76	*Lynchburg, Va.	PI	12,641	12,319	2	2.16
82	70	Albany, N. Y. (5)	MO	12,249	13,213	— 8	4.78
83	101	Santa Barbara, Calif.	PC	12,217	8,636	41	5.58
84	86	Grand Rapids, Mich.	NO, LC	12,006	10,482	14	3.67
85	82	Monroe, La.	SO	11,619	11,047	5	6.95
86	57	Fort Worth, Texas	TT, CN	11,509	14,631	—21	1.50
87	87	*El Centro, Calif.	BL	11,478	10,274	11	5.34
88	85	New Orleans, La.	SO	11,424	10,814	5	8.66
89	90	*Wausau, Wis.	NO	11,400	9,874	15	2.74
90	96	Spokane, Wash.	WC	11,257	9,166	22	5.02
91	80	Little Rock, Ark.	CN, TT	11,055	11,252	— 2	4.10
92	69	Raleigh, N. C. (5)	PI	10,928	13,580	—20	3.86
93	67	Lexington, Ky. (5)	PI	10,659	13,864	—24	2.36
94	89	Columbus, Ga.	SO	10,639	10,069	5	2.93
95	97	*Lewiston, Idaho (5)	WC	10,548	9,086	16	3.72
96	110	Walla Walla, Wash.	WC	10,219	8,005	27	3.16
97	92	Watertown, N. Y.	MO	10,114	9,797	4	10.22
98	88	*Yuma, Ariz.	BL	10,057	10,129	— 1	4.61
99	99	Paducah, Ky.	OZ	9,660	8,862	9	5.51
100	105	Burbank, Calif.	PC	9,599	8,380	15	5.49
101	95	Shreveport, La.	TT	9,465	9,189	3	3.96
102	117	Joplin, Mo.	CN, OZ	9,446	7,676	23	3.15
103	107	Wilmington, N. C.	PI	9,372	8,162	14	5.29
104	104	*McAllen, Texas (5)	TT	9,269	8,457	9	5.34
105	100	*Johnstown, Pa.	AL	9,140	8,789	3	2.64
106	93	*Tyler, Texas	TT	8,731	9,429	— 8	2.26
107	109	Reno, Nev.	BL	8,623	8,107	6	11.84
108	108	*Greenville, Miss.	SO	8,465	8,130	4	3.11
109	128	Hot Springs, Ark.	TT, CN	8,397	6,846	22	2.86
110	118	*Lafayette, Ind.	LC	8,322	7,593	9	4.16
111	120	*Mansfield, Ohio	LC	8,206	7,350	11	2.66
112	121	*Flagstaff, Ariz.	FL	8,202	7,287	12	4.19
113	113	Corpus Christi, Texas	TT	8,186	7,745	5	2.65
114	112	Winston-Salem, N. C.	PI	8,157	7,786	4	2.93
115	131	*Philipsburg, Pa. (5)	AL	8,120	6,655	22	4.23
116	119	*Harlingen, Texas (5)	TT	8,114	7,521	7	2.94
117	111	*Bluefield, W. V. (5)	PI	8,104	7,989	1	2.84
118	130	*Redding, Calif.	PC	8,072	6,678	20	4.64
119	132	Asheville, N. C. (5)	PI	8,002	6,621	20	4.74
120	139	Oklahoma City, Okla.	CN	7,801	5,992	30	4.38
121	123	*Beloit, Wis. (5)	NO	7,797	7,013	11	3.00
122	115	*Port Angeles, Wash.	WC	7,619	7,699	— 2	11.07
123	116	Poughkeepsie, N. Y.	MO	7,498	7,694	— 3	16.44

(Continued on next page)

Passengers Boarded at Fifty Leading Cities Served Exclusively by Local Service Airlines, 1957

Rank 1957	Rank 1956	City and State	Revenue Passengers	Airline
1	1	Utica, N. Y.	45,865	Mohawk
2	3	Rockford, Ill.	29,161	Ozark
3	2	Ithaca, N. Y.	28,370	Mohawk
4	4	Eureka, Calif.	27,403	Pacific Coast
5	6	Duluth, Minn.	26,584	North Central
6	5	Bradford, Pa.	26,252	Allegheny
7	7	Green Bay, Wis.	24,540	North Central
8	10	San Jose, Calif.	22,568	Pacific Coast
9	8	Kalamazoo, Mich.	22,036	North Central, Lake Central
10	23	Farmington, N. Mex.	15,607	Frontier
11	12	Charlottesville, Va.	14,614	Piedmont
12	16	Battle Creek, Mich.	14,479	North Central
13	13	Champaign, Ill.	13,800	Ozark
14	14	North Bend, Ore.	12,828	West Coast
15	17	Decatur, Ill.	12,702	Ozark
16	15	Lynchburg, Va.	12,641	Piedmont
17	19	El Centro, Calif.	11,478	Bonanza
18	21	Wausau, Wis.	11,400	North Central
19	24	Lewiston, Idaho	10,548	West Coast
20	20	Yuma, Ariz.	10,057	Bonanza
21	26	McAllen, Texas	9,269	Trans-Texas
22	25	Johnstown, Pa.	9,140	Allegheny
23	22	Tyler, Texas	8,731	Trans-Texas
24	28	Greenville, Miss.	8,465	Southern
25	32	Lafayette, Ind.	8,322	Lake Central
26	34	Mansfield, Ohio	8,206	Lake Central
27	35	Flagstaff, Ariz.	8,202	Frontier
28	40	Philipsburg, Pa.	8,120	Allegheny
29	33	Harlinger, Texas	8,114	Trans-Texas
30	29	Bluefield, W. Va.	8,104	Piedmont
31	39	Redding, Calif.	8,072	Pacific Coast
32		Beloit, Wis.	7,797	North Central
33	31	Port Angeles, Wash.	7,619	West Coast
34	38	Longview, Texas	7,418	Trans-Texas
35	44	Columbia, Mo.	6,632	Ozark
36	49	Lima, Ohio	6,632	Lake Central
37	43	Columbus, Miss.	6,525	Southern
38	42	Chico, Calif.	6,293	Pacific Coast
39	45	Wenatchee, Wash.	6,253	West Coast
40	30	Altoona, Pa.	6,225	Allegheny
41	27	Jamestown, N. Y.	6,079	Allegheny
42	41	Durango, Colo.	6,057	Frontier
43		Hoquiam, Wash.	6,054	West Coast
44	48	Fayetteville, Ark.	5,905	Central
45		Stevens Point, Wis.	5,849	North Central
46		La Crosse, Wis.	5,726	North Central
47	50	Rhinelander, Wis.	5,532	North Central
48		Eau Claire, Wis.	5,451	North Central
49		Kinston, N. C.	4,227	Piedmont
50		Roseburg, Ore.	4,200	West Coast

1957 Traffic Record at Local Service Stops

(Continued from preceding page)

Rank 1957	Rank 1956	City and State	Carrier	Passengers Boarded 1957	Passengers Boarded 1956	Percent Change 1956-57	Passengers Boarded Per Departure
124	137	San Diego, Calif.	BL	7,459	6,124	21	3.51
125	127	*Longview, Texas (5)	TT	7,418	6,928	7	1.82
126	98	Jackson, Miss.	SO	7,283	8,955	—19	4.36
127	149	Youngstown, Ohio	LC	7,222	5,128	40	5.88
128	122	Greensboro, N. C. (5)	PI	7,191	7,836	— 9	2.28
129	106	Knoxville, Tenn.	PI	7,155	8,201	—13	7.07
130	91	Billings, Mont.	FL	6,891	9,847	—31	5.44
131	135	San Angelo, Texas	TT	6,855	6,368	7	4.95
132	142	Austin, Texas	TT	6,821	5,708	19	2.13
133	126	Ontario, Calif. (5)	BL	6,665	6,930	— 4	3.73
134	144	*Columbia, Mo.	OZ	6,632	5,502	20	3.40
135	154	*Lima, Ohio	LC	6,632	4,940	34	3.21
136	143	*Columbus, Miss.	SO	6,525	5,581	16	3.42
137	165	Pullman, Wash.	WC	6,523	4,551	43	2.99
138	125	Jacksonville, Fla.	SO	6,514	7,001	— 7	6.47
139	124	Tulsa, Okla.	CN	6,369	7,008	—10	3.82
140	145	Terre Haute, Ind.	LC	6,326	5,474	15	4.58
141	141	*Chico, Calif.	PC	6,293	5,802	8	2.97
142	146	*Wenatchee, Wash.	WC	6,253	5,418	15	4.70
143	114	*Altoona, Pa.	AL	6,225	7,709	—20	2.75
144	134	Baton Rouge, La.	SO	6,144	6,372	— 4	2.34
145	100	*Jamestown, N. Y.	AL	6,079	8,789	—31	2.37
146	140	*Durango, Colo.	FL	6,057	5,861	3	3.31
147	183	*Hoquiam, Wash. (5)	WC	6,054	4,015	50	4.25
148	243	Panama City, Fla.	SO	6,009	2,325	158	7.20
149	152	*Fayetteville, Ark.	CN	5,905	4,991	18	2.17
150	195	Springfield, Mo.	OZ	5,869	3,625	61	3.29
151	147	Pueblo, Colo.	FL	5,865	5,321	10	2.11
152	161	*Stevens Point, Wis. (5)	NO	5,849	4,727	23	1.59
153	138	Oakland, Calif.	PC	5,816	6,010	— 4	1.85
154	173	Wichita, Kan.	CN, OZ	5,791	4,291	34	3.89
155	136	Gulfport, Miss. (5)	SO	5,733	6,137	— 7	4.54
156	160	*La Crosse, Wis.	NO	5,726	4,739	20	3.47
157	179	Pocatello, Idaho	WC	5,656	4,121	37	3.09
158	205	Twin Falls, Idaho	WC	5,613	3,302	69	3.10
159	166	Quincy, Ill. (5)	OZ	5,543	4,485	23	4.35
160	155	*Rhinelander, Wis.	NO	5,532	4,871	13	3.17
161	171	*Eau Claire, Wis.	NO	5,451	4,340	25	1.79
162	157	Idaho Falls, Idaho	WC	5,436	4,810	13	5.94
163	175	Lansing, Mich.	NO	5,429	4,241	28	2.36
164	151	*Tuscaloosa, Ala.	SO	5,367	5,010	7	2.80
165	164	Wheeling, W. Va.	AL	5,242	4,604	13	3.04
166	162	*Gadsden, Ala.	SO	5,219	4,722	10	2.77
167	159	Lawton, Okla. (5)	CN	5,103	4,766	7	3.87
168	169	*Jackson, Mich.	NO	5,079	4,368	16	1.51
169	156	Valdosta, Ga.	SO	5,061	4,814	5	2.58
170	192	*White Plains, N. Y.	MO	5,043	3,715	35	5.67
171	148	Birmingham, Ala.	SO	4,934	5,248	— 6	2.58
172	150	*Crescent City, Calif.	PC	4,890	5,118	— 4	2.89
173	158	*Laredo, Texas	TT	4,846	4,808	0	5.13
174	153	Eugene, Ore.	WC	4,839	4,981	— 3	2.15
175	185	*Oxnard, Calif. (5)	PC	4,836	3,938	22	3.40
176	182	Lancaster, Pa.	AL	4,830	4,028	19	2.11
177	190	*Cortez, Colo.	FL	4,809	3,784	27	3.27
178	172	*Victoria, Texas	TT	4,777	4,298	11	1.68
179	168	Albany, Ga.	SO	4,714	4,376	7	2.35
180	207	*Santa Ana, Calif.	BL	4,700	3,289	42	2.32
181	177	*Riverton, Wyo. (5)	FL	4,665	4,138	12	2.16
182	201	*Astoria, Wash.	WC	4,647	3,375	37	3.29
183	163	Worcester, Mass.	MO	4,643	4,631	0	2.02
184	186	*Danville, Ill.	LC, OZ	4,542	3,918	15	2.27
185	197	*Santa Maria, Calif.	PC	4,540	3,600	26	3.21
186	184	*Chisholm, Minn. (5)	NO	4,532	3,950	14	2.88
187	170	Texarkana, Texas	TT	4,508	4,349	3	2.93
188	174	Prescott, Ariz.	BL, FL	4,465	4,935	—10	1.24
189	188	*Escanaba, Mich.	NO	4,445	3,811	16	4.30
190	129	Casper, Wyo.	FL	4,404	6,747	—35	3.02
191	167	*Franklin, Pa. (5)	AL	4,326	4,432	— 3	2.85

(Continued on next page)

which ranked 58th and 54th respectively in 1956.

Again in 1957 as in 1956 the top 10 cities boarded 26% of the total traffic. Coincidentally, exactly the same number of cities in 1957 as in 1956 — 102 — showed traffic decreases, and, again as in 1956, two-thirds of the decreases were cities in the lower half of the listing by boardings.

Boardings per departure for all cities averaged 4.8 in 1957, continuing the increase that has moved upward steadily from 3.8 in 1954 to 4.4 in 1955, to 4.7 in 1956. New York's average of 18.06

LOCAL SERVICE AIRLINES
Comparison of Revenue Express and Freight Ton-Miles Flown
1956 - 1957

Carrier	1956	1957	% Increase
Allegheny	287,199	374,222	30.3
Bonanza	106,909	102,248	(4.4)
Central	97,414	112,926	15.9
Frontier	741,901	837,171	12.8
Lake Central	148,012	160,526	8.5
Mohawk	233,175	411,549	76.5
North Central	361,346	364,478	0.9
Ozark	281,093	349,536	24.3
Pacific*	158,492	133,941	(15.5)
Piedmont	297,961	283,395	(4.9)
Southern	155,411	132,435	(14.8)
Trans-Texas	346,149	377,491	9.1
West Coast	90,799	85,666	(5.6)
Totals	3,305,841	3,725,584	12.7

*Formerly Southwest

LOCAL SERVICE AIRLINES
Comparison of Total Non-Mail Revenue (Cents Per Revenue Mile)
1956 - 1957

Carrier	1956	1957	% Increase
Allegheny	83.95	85.36	1.68
Bonanza	63.59	65 92	3.66
Central	45.34	46.91	3.46
Frontier	65.60	69.89	6.54
Lake Central	60.93	60.22	(1.17)
Mohawk	114.38	110.82	(3.11)
North Central	81.69	82.89	1.47
Ozark	62.68	70.09	11.82
Pacific*	85.73	90.08	5.07
Piedmont	74.34	77.36	4.06
Southern	59.05	61.48	4.13
Trans-Texas	53.24	58.05	9.03
West Coast	60.72	64.61	6.41
Average	71.69	74.91	4.49

*Formerly Southwest

Fifty Leading Cities Served by Local Service Airlines

(Ranked in Order by Passengers Boarded Per Departure)

Rank	City and State	Airline	Psgrs. Per Deptr.
1.	New York, N. Y.	MO, AL	18.06
2.	Poughkeepsie, N. Y.	MO	16.44
3.	Chicago, Ill.	NO, OZ, LC	15.00
4.	Washington, D. C.	PI, AL	14.49
5.	Los Angeles	PC, BL	14.14
6.	Denver, Colo.	FL, CN	13.63
7.	Atlanta, Ga.	SO	13.62
8.	Cincinnati, Ohio	PI, LC	12.07
9.	Reno, Nev.	BL	11.84
10.	Louisville, Ky.	PI, OZ	11.65
11.	Boston, Mass.	MO	11.23
12.	Seattle, Wash.	WC	11.17
13.	Pittsburgh, Pa.	AL, LC	11.15
14.	Albuquerque, N. M.	FL	11.12
15.	Port Angeles, Wash.	WC	11.07
16.	San Francisco, Calif.	PC	10.85
17.	Las Vegas, Nev.	BL, PC	10.58
18.	Watertown, N. Y.	MO	10.22
19.	Phoenix, Ariz.	BL, FL	10.13
20.	Minneapolis, Minn.	OZ, NO	10.01
21.	Salt Lake City, Utah	FL	9.88
22.	Cleveland, Ohio	AL, LC	9.65
23.	Monterey, Calif.	PC	9.65
24.	St. Louis, Mo.	OZ, CN	9.61
25.	Boise, Idaho	WC	9.36
26.	Eureka, Calif.	PC	9.36
27.	Kansas City, Mo.	CN, OZ	9.27
28.	Memphis, Tenn.	TT, SO	9.25
29.	Portland, Ore.	WC	9.17
30.	Bristol, Tenn.	PI	9.13
31.	Houston, Texas	TT	9.10
32.	Eglin AFB, Fla.	SO	8.78
33.	New Orleans, La.	SO	8.66
34.	Columbus, Ohio	PI, LC	7.86
35.	Binghamton, N. Y.	MO	7.52
36.	Norfolk, Va.	PI	7.33
37.	Omaha, Nebr.	NO	7.30
38.	Panama City, Fla.	SO	7.20
39.	Knoxville, Tenn.	PI	7.07
40.	Duluth, Minn.	NO	7.04
41.	Monroe, La.	SO	6.95
42.	Rockford, Ill.	OZ	6.93
43.	Detroit, Mich.,	MO, AL, NO, LC	6.92
44.	Charlotte, N. C.	PI, SO	6.84
45.	Beaumont, Texas	TT	6.76
46.	Atlantic City, N. J.	AL	6.70
47.	Ithaca, N. Y.	MO	6.66
48.	Buffalo, N. Y.	AL, MO, LC	6.65
49.	Milwaukee, Wis.	OZ, NO	6.64
50.	North Bend, Ore.	WC	6.59

Fifty Leading Cities Served Exclusively by Local Service Airlines

(Ranked in Order by Passengers Boarded Per Departure)

Rank	City and State	Airline	Psgrs. Per *Deptr.
1.	Port Angeles, Wash.	WC	11.07
2.	Eureka, Calif.	PC	9.36
3.	Eglin AFB, Fla.	SO	8.78
4.	Duluth, Minn.	NO	7.04
5.	Rockford, Ill.	OZ	6.93
6.	Ithaca, N. Y.	MO	6.66
7.	North Bend, Ore.	WC	6.59
8.	Utica, N. Y.	MO	6.31
9.	Ogdensburg, N. Y.	MO	6.15
10.	San Jose, Calif.	PC	5.96
11.	White Plains, N. Y.	MO	5.67
12.	International Falls, Minn.	NO	5.35
13.	El Centro, Calif.	BL	5.34
14.	McAllen, Texas	TT	5.34
15.	Myrtle Beach, S. C.	PI	5.29
16.	Cape May, N. J.	AL	5.19
17.	Laredo, Texas	TT	5.13
18.	Morehead City, N. C.	PI	5.08
19.	Wenatchee, Wash.	WC	4.70
20.	Redding, Calif.	PC	4.64
21.	Yuma, Ariz.	BL	4.61
22.	Houghton, Mich.	NO	4.45
23.	Champaign, Ill.	OZ	4.31
24.	Escanaba, Mich.	NO	4.30
25.	Hoquiam, Wash.	WC	4.25
26.	Philipsburg, Pa.	AL	4.23
27.	Flagstaff, Ariz.	FL	4.19
28.	Lafayette, Ind.	LC	4.16
29.	Yankton, S. D.	NO	4.00
30.	Bradford, Pa.	AL	3.96
31.	Decatur, Ill.	OZ	3.94
32.	Kalamazoo, Mich.	NO, LC	3.92*
33.	Salisbury, Md.	AL	3.88
34.	Farmington, N. M.	FL	3.86
35.	Battle Creek, Mich.	NO	3.82
36.	Lewiston, Idaho	WC	3.72
37.	Pasco, Wash.	WC	3.50
38.	La Crosse, Wis.	NO	3.47
39.	Columbus, Miss.	SO	3.42
40.	Columbia, Mo.	OZ	3.40
41.	Oxnard, Calif.	PC	3.40
42.	Charlottesville, Va.	PI	3.33
43.	Oshkosh, Wis.	NO	3.33
44.	Durango, Colo.	FL	3.31
45.	Astoria, Wash.	WC	3.29
46.	Cortez, Colo.	FL	3.27
47.	Lima, Ohio.	LC	3.21
48.	Santa Maria, Calif.	PC	3.21
49.	Land O'Lakes, Wis.	NO	3.20
50.	Hagerstown, Md.	AL	3.19

Rank 1957	Rank 1956	City and State	Carrier	Passengers Boarded 1957	Passengers Boarded 1956	Percent Change 1956/57	Passengers Boarded Per Departure
192	....	Cedar Rapids, Iowa (1)	OZ	4,245	.....	.....	3.26
193	194	*Kinston, N. C.	PI	4,227	3,644	15	2.79
194	178	*Roseburg, Ore.	WC	4,200	4,132	1	2.28
195	196	*Marinette, Wis. (5)	NO	4,073	3,600	13	2.04
196	191	*Jefferson City, Mo.	OZ	4,066	3,740	8	2.16
197	203	*Bloomington, Ill.	OZ	4,045	3,311	22	2.81
198	212	Lake Charles, La.	TT	4,011	3,200	25	3.06
199	214	*Paso Robles, Calif. (5)	PC	3,988	3,188	25	2.82
200	181	*Ephrata, Wash. (5)	WC	3,956	4,042	— 3	2.82
201	218	Tucson, Ariz.	FL	3,939	2,912	35	5.44
202	206	*International Falls, Minn.	NO	3,897	3,294	18	5.35
203	180	Newport News, Va.	PI	3,876	4,108	— 6	1.58
204	176	*Natchez, Miss.	SO	3,849	4,155	— 8	1.72
205	258	*Burlington, Iowa	OZ	3,822	1,892	102	3.00
206	237	*Athens, Ga.	SO	3,806	2,457	54	3.03
207	211	*Marquette, Wis.	NO	3,712	3,226	15	2.81
208	199	*Dubuque, Iowa	OZ	3,675	3,482	5	2.78
209	213	New Bern, N. C.	PI	3,580	3,189	63	2.82
210	189	*Hagerstown, Md.	AL	3,572	3,786	— 6	3.19
211	297	Dothan, Ala. (4)	SO	3,554	1,181	200	2.18
212	226	Mason City, Iowa	OZ	3,527	2,792	26	2.72
213	231	Lafayette, La.	TT	3,526	2,625	34	5.37
214	200	Mobile, Ala.	SO	3,502	3,392	3	5.39
215	187	Cheyenne, Wyo.	FL	3,491	3,918	—11	2.50
216	198	*Salisbury, Md.	AL	3,482	3,578	— 3	3.88
217	210	Klamath Falls, Ore.	WC	3,452	3,230	6	4.86
218	270	Des Moines, Iowa	OZ	3,448	1,609	114	5.21
219	229	*Houghton, Mich. (5)	NO	3,425	2,680	27	4.45
220	215	*Corvallis, Ore. (5)	WC	3,297	3,166	4	1.53
221	246	*Iron Mountain, Mich.	NO	3,258	2,257	44	2.20
222	209	Dayton, Ohio	LC	3,244	3,248	44	2.53
223	239	*Montrose, Colo.	FL	3,243	2,439	32	2.29
224	202	*Hickory, N. C.	PI	3,216	3,367	— 5	1.74
225	221	*Manitowoc, Wis.	NO	3,167	2,836	11	2.20
226	232	*Ponca City, Okla.	CN	3,133	2,618	19	1.65
227	204	Winslow, Ariz.	FL	3,112	3,310	— 6	1.43
228	....	Omaha, Neb. (1)	NO	3,096	.....	.....	7.30
229	227	Greenville, S. C.	SO	3,071	2,764	11	2.49
230	219	*Kokomo, Ind. (5)	LC	3,033	2,869	5	1.61
231	208	*Santa Rose, Calif.	PC	2,987	3,284	—10	2.23
232	257	*Grand Forks, N. D. (4)	NO	2,963	1,922	54	2.65
233	225	Vernal, Utah	FL	2,933	2,792	5	2.11
234	233	*Enid, Okla.	CN	2,923	2,614	11	1.57
235	316	*Glens Falls, N. Y.	MO	2,918	840	340	2.28
236	224	*Moultrie, Ga.	SO	2,882	2,816	2	1.47
237	217	Nashville, Tenn.	OZ	2,834	3,081	— 9	6.55
238	193	*Marysville, Calif.	PC	2,800	3,981	—30	1.49
239	223	*Alamosa, Colo.	FL	2,798	2,822	— 1	1.35
240	222	*Gallup, N. Mex.	FL	2,795	2,834	— 2	2.04
241	273	Waterloo, Iowa	OZ	2,738	1,582	73	2.01
242	238	*Pine Bluff, Ark.	TT	2,718	2,444	11	1.05
243	248	Springfield, Mass. (5)	MO	2,705	2,197	23	1.65
244	252	*Marion, Ill. (5)	OZ	2,687	1,961	37	2.14
245	220	*Tupelo, Miss.	SO	2,687	2,861	— 7	1.44
246	216	*Beckley, W. Va.	PI	2,671	3,081	—14	1.24
247	234	*Laramie, Wyo.	FL	2,647	2,569	3	1.90
248	230	Bartlesville, Okla.	CN	2,592	2,670	— 3	2.21
249	249	*Cape Girardeau, Mo.	OZ	2,547	2,067	23	2.01
250	260	*Ironwood, Mich.	NO	2,471	1,853	33	1.87
251	245	*Worland, Wyo.	FL	2,465	2,294	7	1.68
252	324	*Marion, Ind.	LC	2,457	747	327	1.91
253	242	*Cody, Wyo.	FL	2,364	2,345	0	3.08
254	228	*Vicksburg, Miss.	SO	2,313	2,691	—15	1.48
255	276	Sioux City, Iowa	NO, OZ	2,310	1,513	52	1.63
256	300	*Ottumwa, Iowa	OZ	2,273	1,111	105	1.76
257	360	*Liberal, Kan.	CN	2,249	205	.....	1.96
258	241	*Borger, Texas	CN	2,242	2,394	— 7	2.01
259	266	*Bemidji, Minn.	NO	2,160	1,714	26	1.65
260	....	*Hazelton, Pa. (1)	AL	2,141	.....	.....	3.18
261	247	*Lufkin, Texas	TT	2,135	2,209	— 4	1.47
262	250	*El Dorado, Ark.	TT	2,121	2,047	3	1.64
263	235	*Williston, N. D.	FL	2,089	2,484	—16	1.95
264	261	*Dover, Del.	AL	2,073	1,829	13	2.46
265	236	*Rock Springs, Wyo.	FL	2,067	2,482	—17	1.43
266	....	Rochester, Minn. (1)	OZ	2,058	.....	.....	1.59
267	262	*Bloomington, Ind.	LC	2,044	1,823	12	1.68
268	263	*Clarksville, Tenn.	OZ	2,035	1,792	13	1.57
269	277	*Brainerd, Minn.	NO	2,015	1,512	33	1.63
270	254	*Marion, Ohio	LC	1,989	1,948	2	1.02
271	253	*Ukiah, Calif.	PC	1,959	1,951	0	1.87
272	272	Wilmington, Del.	AL	1,926	1,602	20	1.49
273	....	*Elgin AFB, Fla. (1)	SO	1,916	.....	.....	8.78
274	251	Ft. Dodge, Iowa	OZ	1,884	2,027	— 8	1.61
275	279	*Red Bluff, Calif.	PC	1,735	1,483	16	1.34
276	269	Owensboro, Ky.	OZ	1,717	1,655	3	1.68
277	292	Spartanburg, S. C.	SO	1,711	1,257	36	1.38
278	240	*Indio, Calif. (5)	BL	1,701	2,431	—31	1.25
279	284	*Silver City, N. Mex. (5)	FL	1,685	1,404	20	2.33
280	285	*Trenton, N. J.	AL	1,664	1,382	20	1.52
281	265	*Laurel, Miss.	SO	1,660	1,763	— 6	1.29
282	365	Colorado Springs, Colo.	CN	1,632	78	.....	2.80
283	278	*London, Ky. (5)	PI	1,621	1,504	7	1.71
284	290	*Zanesville, Ohio	LC	1,619	1,311	23	1.36
285	....	*Ogdensburg, N. Y. (1)	MO	1,613	.....	.....	6.15
286	267	*Duncan, Okla.	CN	1,585	1,697	— 7	1.22
287	275	*Richmond, Ind.	LC	1,585	1,576	0	1.35
288	282	*Blythe, Calif.	BL	1,579	1,456	8	1.18
289	280	Amarillo, Texas	CN	1,563	1,479	5	2.54
290	293	*Coeur d'Alene, Idaho	WC	1,545	1,249	23	1.26
291	287	*Myrtle Beach, S. C. (3)	PI	1,542	1,366	12	5.29
292	271	*Dover, Ohio (5)	LC	1,536	1,604	— 5	1.22
293	283	*Clintonville, Wis.	NO	1,535	1,410	8	1.16
294	....	Fargo, N. D. (1)	NO	1,503	.....	.....	1.83
295	274	*Kingman, Ariz.	BL	1,493	1,581	— 6	1.10
296	294	*Paris, Texas	CN	1,466	1,232	18	1.08
297	....	*Portsmouth, Ohio (1)	LC	1,434	.....	.....	2.29
298	289	*Clinton, Iowa	OZ	1,426	1,334	6	1.13
299	291	Stockton, Calif.	PC	1,425	1,270	12	1.75
300	296	*Galveston, Texas	TT	1,415	1,200	17	1.07
301	256	*Muskogee, Okla.	CN	1,384	2,302	—40	.83
302	301	Pendleton, Ore.	WC	1,356	1,075	26	1.89

(Continued on page 76)

SELECTED REVENUES AND EXPENSES (Dollars in 000's)	Allegheny	Bonanza	Central	Frontier	Lake Central
Passenger Revenue	5,138	1,927	1,438	3,420	1,569
Total Non-Mail Revenue	5,463	2,087	1,580	3,902	1,675
Mail Pay	2,958	1,361	2,413	2,528	1,777
Total Revenue	8,421	3,448	3,993	6,430	3,452
Total Expense	8,495	3,543	4,227	6,541	3,533
Profit (or Loss)	(74)	(95)	(234)	(111)	(81)
Break-Even Need	3,032	1,456	2,647	2,639	1,858
SELECTED OPERATING STATISTICS					
Revenue Miles (000)	6,400	3,165	3,369	5,584	2,781
Originating Passengers	440,389	150,423	118,867	219,360	160,784
Enplaned Passengers	456,148	154,955	123,072	247,803	165,448
Revenue Passenger Miles (000)	77,011	33,044	23,726	59,343	25,549
Passenger Load Factor (%)	48.3	49.7	33.5	50.6	43.7
Revenue Ton-Miles (000)	7,827	3,312	2,437	6,747	2,641
Ton-Mile Utilization Factor (%)	44.4	43.6	30.1	50.3	39.6
REVENUES AND EXPENSES—Cents Per Revenue Mile					
Revenues:					
Passenger	80.28	60.87	42.70	61.25	56.41
Total Non-Mail	85.36	65.92	46.91	69.89	60.22
Mail Pay	46.21	43.01	71.62	45.27	63.91
Total Revenue	131.57	108.93	118.53	115.16	124.13
Expenses:					
Flying Operations	44.27	35.33	38.82	38.96	40.10
Total Maintenance	24.95	21.59	21.83	22.72	22.97
Passenger Service	6.49	5.39	5.63	5.98	5.49
Aircraft and Traffic Service	31.08	28.57	35.00	29.93	37.03
Promotion and Sales	13.28	7.80	8.61	9.73	7.91
General and Administrative	6.71	7.83	10.24	7.52	10.43
Depreciation and Amortization	5.95	5.42	5.34	2.31	3.10
Total Expense	132.73	111.93	125.47	117.15	127.03
Profit (or Loss)	(1.16)	(3.00)	(6.94)	(1.99)	(2.90)
Break-Even Need	47.37	46.01	78.56	47.26	66.81
SELECTED REVENUES AND EXPENSES—Cents Per Ton-Mile					
Total Non-Mail Revenue	69.8	63.0	64.9	57.8	63.4
Total Expense	108.5	107.0	173.5	96.9	133.7
Break-Even Need	38.7	44.0	108.6	39.1	70.3
ADDITIONAL OPERATING STATISTICS					
Scheduled Miles (000)	6,822	3,088	3,445	5,584	2,876
Completion Factor (%)	93.2	99.5	95.6	98.4	95.8
Average Passenger Load	12.0	10.4	7.0	10.6	9.2
Average Journey:					
Originating Passenger	175	220	200	271	159
Enplaned Passenger	169	213	193	239	154
Revenue Ton-Miles:					
Passenger (000)	7,316	3,134	2,253	5,638	2,432
U. S. Mail	100,690	51,151	50,205	214,637	32,900
Express and Freight	287,199	106,909	97,414	741,901	148,012
Excess Baggage	35,466	24,459	20,080	57,633	15,811
Average Ton Load	1.22	1.05	0.72	1.21	0.95
Ton-Miles of Surface Mail	3,750	19,511	6,415	92,485	2,359
Total Revenue Hours	45,232	21,311	23,274	37,914	20,218
Average Flying Speed (MPH)	141.5	148.5	144.7	147.3	137.6
Type(s) of Aircraft Operated	202/DC-3	DC-3	DC-3	DC-3	DC-3
Number of Aircraft Operated	22	10	13	16	10
Daily Aircraft Utilization	5:54	6:35	5:11	7:22	5:36
Weighted Av. Route Mileage in Operation	1,658	1,283	2,252	2,976	1,448
Daily Route Mile Turnover (4th quarter)	8.0	5.7	2.8	4.4	4.3
Tons of Cargo Carried:					
U. S. Mail	696	230	255	698	263
Express	1,317	188	162	277	1,119
Freight	998	405	465	2,165	
Gallons of Fuel Consumed (000)	5,751	2,301	2,505	4,153	2,171
Number of Actual Departures	76,240	27,990	39,897	58,005	40,664
Departures Per Day	209	77	109	159	112
Per Actual Departure:					
Revenue Miles	83.9	113.1	84.4	96.3	68.4
Enplaned Passengers	6.0	5.5	3.1	4.3	4.1
Revenue Passenger Miles	1,010	1,181	595	1,023	628
Number of Employees (Average)	790	341	421	697	387
Per Employee:					
Revenue Miles	8,101	9,282	8,001	8,011	7,186
Enplaned Passengers	577	454	292	356	428
Revenue Passenger Miles (000)	97.5	96.9	56.4	85.1	66.0
ADDITIONAL FINANCIAL DATA					
Ratio-Total Expense to Non-Mail Revenue	1.55	1.70	2.67	1.68	2.11
Non-Mail Revenue Per:					
Actual Departure (Dollars)	71.66	74.55	39.61	67.28	41.18
Employee (Dollars)	6,916	6,119	3,753	5,599	4,327
Passenger Revenue Per:					
Originating Passenger (Dollars)	11.67	13.04	12.30	16.02	9.80
Enplaned Passenger (Dollars)	11.30	12.85	11.87	14.20	9.53
Revenue Passenger Miles (Cents)	6.69	6.02	6.19	5.94	6.23

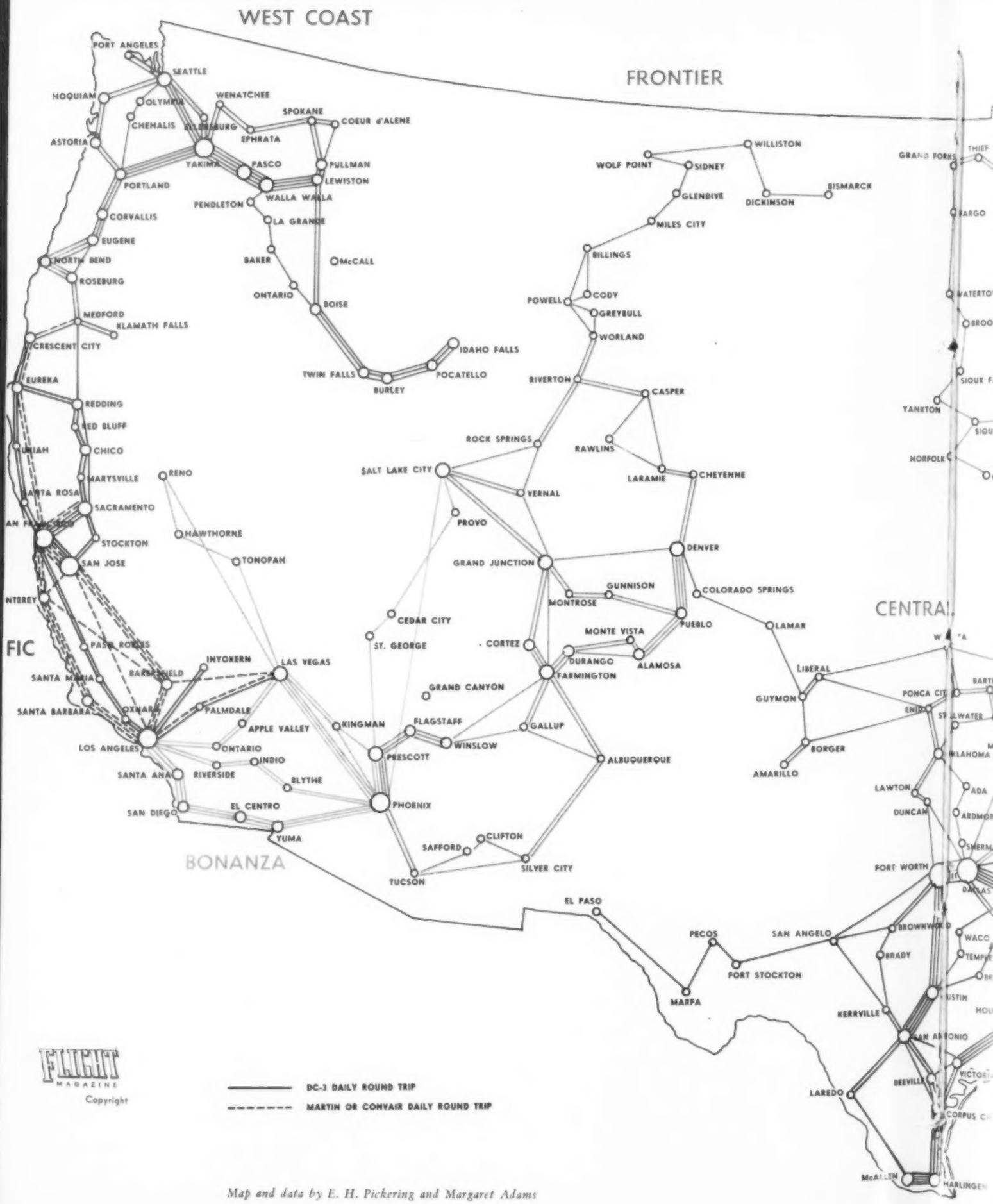
*Pacific, Formerly Southwest.
†Ozark operates "HY-Per" DC-3's.
‡Trans-Texas operates "Maximizer" DC-3's.

Airline Operations for 1957

Mohawk	North Central	Ozark	Pacific*	Piedmont	Southern	Trans-Texas	West Coast	Total or Average
5,328	7,372	4,031	3,890	5,293	2,262	3,298	2,499	47,465
5,886	7,871	4,328	4,100	5,744	2,398	3,641	2,604	51,279
2,674	2,702	3,148	1,891	2,582	2,029	3,071	1,727	30,861
8,560	10,573	7,476	5,991	8,326	4,427	6,712	4,331	82,140
8,579	10,726	7,425	6,045	8,188	4,566	6,540	4,492	82,900
(19)	(153)	51	(54)	138	(139)	172	(161)	(760)
2,693	2,855	3,097	1,945	2,444	2,168	2,899	1,888	31,621
5,311	9,495	6,174	4,552	7,424	3,901	6,271	4,031	68,458
426,781	658,810	390,753	337,200	401,168	211,916	243,348	254,062	4,013,861
452,194	680,930	399,337	356,121	436,328	216,615	256,088	290,882	4,235,921
81,405	106,723	63,835	72,994	83,808	38,318	55,330	45,128	766,214
53.8	53.5	49.2	56.4	53.8	46.8	42.0	53.3	49.9
8,253	10,844	6,584	7,207	8,474	3,920	5,823	4,445	78,514
50.5	47.6	44.4	51.6	47.6	41.9	38.7	46.0	45.3
100.32	77.65	65.28	85.45	71.29	57.99	52.59	62.00	69.33
110.82	82.89	70.09	90.08	77.36	61.48	58.05	64.61	74.91
50.35	28.46	51.00	41.53	34.78	52.01	48.97	42.85	45.08
161.17	111.35	121.09	131.61	112.14	113.49	107.02	107.46	119.99
47.60	36.40	35.03	41.88	38.05	35.26	33.41	39.97	38.72
38.34	21.37	25.60	31.82	19.88	22.08	22.24	16.55	23.99
6.81	5.91	6.23	5.08	6.35	5.34	5.17	5.54	5.88
33.57	32.60	30.93	27.48	29.48	32.33	27.61	28.93	30.91
11.64	6.55	7.76	7.51	8.57	10.42	7.53	9.04	8.90
10.96	5.31	6.92	9.33	4.92	7.01	4.91	7.94	7.21
12.61	4.83	7.81	9.70	3.03	4.59	3.41	3.48	5.49
161.53	112.97	120.28	132.80	110.28	117.03	104.28	111.45	121.10
(0.36)	(1.62)	0.81	(1.19)	1.86	(3.54)	2.74	(3.99)	(1.11)
50.71	30.08	50.19	42.72	32.92	55.55	46.23	46.84	46.19
71.3	72.6	65.7	56.9	67.8	61.2	62.5	58.6	65.3
103.9	98.9	112.8	83.9	96.6	116.5	112.3	101.0	105.6
32.6	26.3	47.1	27.0	28.8	55.8	49.8	42.4	40.3
5,271	9,597	6,424	4,322	7,441	3,912	6,374	4,059	69,215
95.8	96.1	95.1	98.9	98.4	97.8	96.6	98.1	96.7
15.3	11.2	10.3	16.0	11.3	9.8	8.8	11.2	11.2
191	162	163	216	209	181	227	178	191
180	157	160	205	192	177	216	155	181
7,733	10,146	6,063	6,935	7,962	3,641	5,257	4,287	72,797
72,362	255,160	133,777	113,555	161,235	115,057	166,460	52,693	1,520,182
233,175	361,346	281,093	158,492	297,961	155,411	346,149	90,779	3,305,841
35,672	77,471	38,514	24,530	67,786	31,581	22,989	19,702	471,694
1.55	1.14	1.07	1.58	1.14	1.00	0.93	1.10	1.15
8,491	63,598	16,773	20,154	62,976	9,335	28,771	10,609	345,227
34,478	67,984	44,043	28,773	51,134	26,723	41,474	30,047	472,605
154.1	139.7	140.2	158.2	145.2	146.0	151.2	134.1	144.9
240/DC-3	DC-3	DC-3(H)†	202/DC-3	DC-3	DC-3	DC-3(M)‡	DC-3	
22	27	20	18	21	13	20	14	226
4:45	7:21	6:02	4:30	6:41	5:38	5:41	5:53	5:58
1,348	2,355	2,762	1,172	1,871	1,949	2,761	1,728	25,563
7.9	8.2	4.6	7.5	7.4	5.5	4.3	4.8	5.6
480	1,646	827	793	707	661	689	352	8,297
882	2,423	1,302	380	666	699	443	164	10,022
1,251		1,073	515	725	14	1,194	362	9,167
5,793	6,924	4,379	4,378	5,414	2,793	4,540	3,070	54,172
55,931	126,014	73,556	52,907	89,235	51,548	78,298	57,745	828,030
153	345	202	145	244	141	215	158	2,269
95.0	75.3	83.9	86.0	83.2	75.7	80.1	69.8	82.7
8.1	5.4	5.4	6.7	4.9	4.2	3.3	5.0	5.1
1,455	847	868	1,380	939	743	707	782	925
724	1,151	776	442	865	507	685	463	8,249
7,336	8,249	7,956	10,298	8,583	7,694	9,156	7,167	8,299
625	592	515	806	504	427	374	628	514
112.4	92.7	82.3	165.1	96.9	75.6	80.8	97.5	92.9
1.46	1.36	1.72	1.47	1.43	1.90	1.80	1.72	1.62
105.24	62.46	58.83	77.50	64.36	46.53	46.50	45.09	61.93
8,130	6,838	5,577	9,276	6,640	4,730	5,315	5,624	6,216
12.72	11.30	10.40	12.18	13.29	10.75	13.70	10.01	12.00
11.99	10.93	10.17	11.50	12.21	10.52	13.01	8.72	11.37
6.69	7.32	6.40	5.56	6.40	6.03	6.08	5.59	6.35

—(FLIGHT MAGAZINE Compilation by Ray & Ray, Consultants)

Local Service Airline Schedu



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Map and data by E. H. Pickering and Margaret Adams

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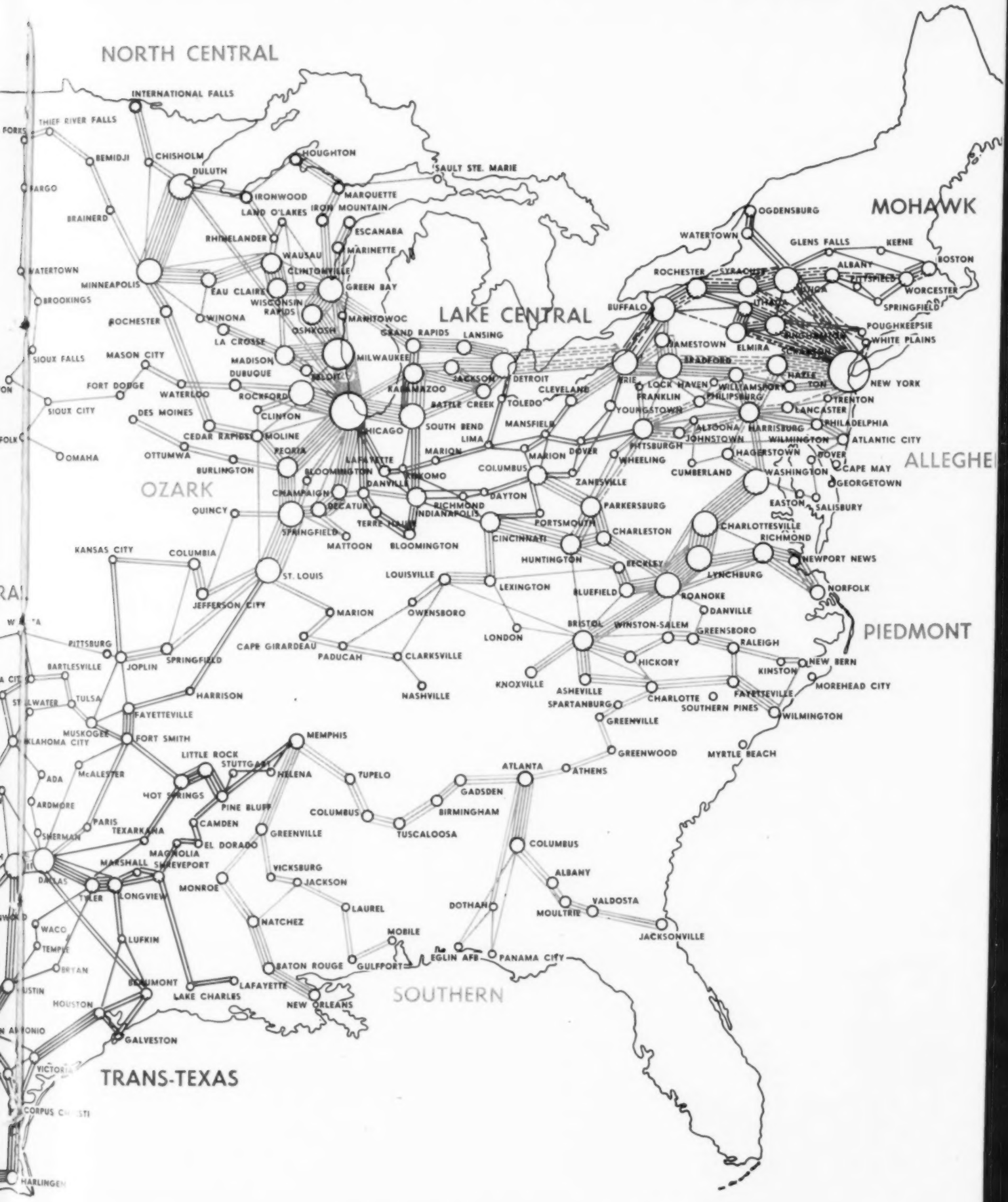


Local Service Airline Directory

L. O. Barnes

Allegheny Airlines, Inc.
Washington National Airport, Hangar No. 12, Washington, D. C.

First scheduled service started Mar. 7, 1949. Now serving 49 cities, 2,205 system route miles, 15 Douglas DC-3's and 7 Martins, 838 employes.
Chairman: Robert M. Love.
President: Leslie O. Barnes.
VP-Traffic & Sales: David L. Miller.
VP-Treas.: Walter J. Short.
VP-Scty.: Everett K. Arnold.
VP-Asst. to Pres.: R. G. Dinning.
Dir. Sales: J. K. Svitzer.
Psgr. Svc. Rep.: B. Clark.
Reg. Sales Mgrs.: E. F. Bracken, Pittsburgh; J. R. Luke, Philadelphia; W. J. Meyers, New York City; G. Swearingen, Cleveland; L. T. Ferguson, Harrisburg; J. H. Hiller, Washington.
Dir. Reservations: F. L. Mulvey.
Mgr. Scheds. & Tariffs: G. N. Spooner.
Asst. Controller: W. D. Hay.
Asst. Treas.: G. Gerth.
Dir. Supply: R. C. Gudikunst.
Pur. Agent: G. J. Lostetter.
Dir. Personnel: E. K. Arnold.
Sup. Print Shop: R. A. Hayes.
Dir. Research: J. R. Schrenk.
Dir. Stations: Robert C. Schumm.
Dir. Ops.: H. M. Thompson.
Crew Scheduler: T. Meehan.
Dir. Maint.: L. L. Hilliard.
Chf. Inspector: L. Johnson.
Corp. Counsel: Hale, Stimson, Russell & Nickerson.
Research Consult.: Gotch & Crawford.

Ed Converse

Bonanza Air Lines, Inc.
P. O. Box 391
McCarran Field
Las Vegas, Nevada

First scheduled service started Aug. 6, 1946. Now serving 22 cities, 2,142 system route miles, 10 Douglas DC-3's, (6 Fairchild F-27's on order), 414 employes.
Chairman: L. G. McNeil.
President: Edmund Converse.
VP-Scty.: Florence J. Murphy.
Exec. VP: G. Robert Henry.
VP-Traffic & Sales: Wm. J. Mitchell.
VP-Ops.: Myron W. Reynolds.
VP-Treas.: R. H. Herrnstein.
Public Relations: Jack Arant.
Gen. Traffic Mgr.: C. W. Russell.
Asst. VP-Sales: Larry Decker.
Asst. Treas.: Robert Sherer.
Acctng. Sup., Rev.: Zella Smith.
Asst. Personnel Dir.: John Longwill.
Mgr. Stores: Harry Burt, Sr.
Supt. Pur. & Stores: Earl Hall.
Sup. Print Shop: Frankie Kelley.
Supt. Stations: Bernard Novia.
Div. Chf. Pilots: Paul Beach, C. H. Ferguson.
Chf. Stewardess: Helene Schulte.
Supt. Maint.: George Davis.
Chf. Insp.: Jack O'Dell.
Supt. Comms.: Roger Mohr.
Sup. Reservations: Betty Jones.
Reg. Sales Mgrs.: R. J. Murray, Calif.; Bruce Ryan, Ariz.
Dist. Sales Mgrs.: Phil Mench, Reno; Robert Busseau, Ontario.
Wash. Counsel: W. C. Burt and Al Grisard.

Keith Kahle

Central Airlines, Inc.
Meacham Field,
Fort Worth, Texas

First scheduled service started Sept. 15, 1949. Now serving 34 cities, 3,497 system route miles, 13 Douglas DC-3's, 457 employes.
Chairman: F. Kirk Johnson.
President: Keith Kahle.
Ex. VP-Treas.: F. E. Howe.
VP-Traffic. & Sales: A. S. Aldridge.
VP-Ops.: R. L. Wageneck.
Secty. & Asst. Treas.: C. E. Lundstrom.
Traffic Mgr.: J. C. Dixson.
Asst. Sales Mgr.: W. A. Rollins.
Mgr. Mil. Transp.: R. G. Wagley.
Mgr. Psgr. Svc.: J. W. Force, Jr.
Asst. Mgr. Psgr. Svc.: J. F. O'Drain.
Dist. Sales Mgrs.: H. F. Harburck, Dallas-Ft. Worth; J. P. Jones, Kansas City; V. R. Westbrook, Oklahoma City; J. D. Sullivan, St. Louis; H. Branham, Denver.
Supv. Rates & Tariffs: F. S. K. Masi.
Sales Prom. Mgr.: G. L. Wysatta.
Internal Auditor: H. E. Dalrymple.
Acctng. Sup., Gen.: F. E. Mancuso.
Acctng. Sup., Rev.: R. J. Clauser.
Pur. Agent: A. C. Terrill.
Mgr. Stores: H. W. Nelson.
Dir. Personnel: J. K. Mikel.
Sup. Print Shop: T. M. Lane.
Supt. Stations: T. W. Jones.
Asst. Supt. Stations: John R. Jones.
Dir. Flt. Ops.: W. A. Whitlock.
Chf. Flt. Supt.: R. R. Conner.
Chf. Stewardess: Thelma Doyle.
Dir. Maint.: D. S. Vaughn.
Supt. Maint.: F. N. Walsh.
Chf. Inspector: W. E. Beck.
Supt. Comms.: R. E. Wilson.
Sup. Reservations: Francene Morris.
Corp. Counsel: Hudson, Keltner & Sarsgard.
Wash. Counsel: Pogue & Neal.
Research Consultant: E. H. Pickering.

L. B. Maytag, Jr.

Frontier Airlines, Inc.
Hangar No. 5
Stapleton Airfield
Denver 7, Colorado

First scheduled service started Nov. 27, 1946. Now serving 40 cities, 3,617 system route miles, 16 Douglas DC-3's, 718 employes.
Chairman: Lewis B. Maytag, Jr.
President: C. A. Myhre.
Treasurer: L. Preston Blatter.
VP-Tfc. & Sales: John D. Lindsay.
Secretary: Emil N. Levin.
Asst. Treas.: E. W. Sexton.
Dir. Flt. Ops.: Everett L. Aden.
Asst. Dir. Flt. Ops.: G. H. Nettleblad.
Dir. of Maint. & Eng.: Harvey P. Barnard.
Chf. Engineer: Eugene Lott.
Dir. Economics and Research: John Clark Coe.
Dir. Ground Ops.: W. D. Crismon.
Dir. Purchasing: Bernard E. Foster.
Dir. Publicity: Edward H. Gerhardt.
Dir. Public Rels.: Gerald S. Kitchen.
Dir. Regulatory Proceedings: Scott C. Whitney.
Dir. Personnel: Alvin J. Schmidt.
Employment Mgr.: C. G. Shaffer.
Mgr. Training and Safety: Lloyd Love.
Washington Counsel: Bowen and Scoutt.
Asst. Corp. Scty.: Carole A. Post.
Dir. of Sales Adm.: Chet R. Lubben.
Psgr. Svc. Mgr.: James B. Montgomery.
Sup. Tariffs: Claire Almquist.
Dist. Sales Mgrs.: Gordon Dahl, Denver; Melvin E. Brandt, Billings; Don Boyle, Bismarck; Vern Carlson, Grand Junction; Dex Alger, Salt Lake City; Earl Passwater, Phoenix; Tom Morris, Albuquerque.
Sales Rep.: George Naglich.
Chief Acct.: Dale W. Rausch.
Budget Sup.: Marve Larson.
Property Compt.: A. T. Christensen.
Sup. of Gen. Acctg.: Douglas N. Black.
Sup. of Rev. Acctg.: Karl K. Leonard.
Sup. of IBM's: W. Larry Chase.
Sup. of Acctg.: R. B. Snider.
Supt. Stns.: E. L. Snoke.
Reg. Stn. Sups.: Virgil L. Alvey, Denver; Harold E. Davis, Billings; John E. Griffiths, Phoenix.
Chf. Stewardess: Geri Anderson.
Supt. Maint.: Ken W. Stevenson.
Chief Inspector: Earl Fischer.
Supt. Comms.: Clyde Longhart.
Mgr. Stores: Walter R. Crouch.
Sup. Reservations: William R. Monday.

Gwin Hicks

Lake Central Airlines, Inc.
Weir Cook
Municipal Airport
Indianapolis
44, Ind.

First scheduled service started Nov. 7, 1949. Now serving 31 cities, 2,285 system route miles, 10 Douglas DC-3's, 345 employes.
Chairman: J. J. O'Connell, Jr.
President: Gwin Hicks.
Exec. VP: Lloyd W. Hartman.
VP-Traffic & Sales: D. S. Getchell.
VP-Ops.: Robert W. Clifford.
Asst. Treasurer: J. L. Cory.
Mgr. Tariffs, Sched.: Wm. R. Roth.
Dir. Public Rels.: James Humphrey.
Accounting Sup., Gen.: Ada Royer.
Acctng. Sup., Rev.: J. P. Berfanger.
Chf. Storekeeper: Robert Campbell.
Pur. Agent: C. L. Desterbecque.
Dir. Ec. Research: M. M. ErSelcuk.
Chief Pilot: A. E. Sabo.
Chief Dispatcher: A. E. Woolley.
Supt. Maint.: H. A. Petty.
Psgr. Svc. Mgr.: Robert D. Collins.
Supt. Comms.: Charles Hildebrand.
Sup. Reservations: Juergen Ballast.
Wash. Counsel: Albert Grisard.

R. E. Peach

Mohawk Airlines
Oneida County
Airport
Utica, New York

First scheduled service started April 6, 1945. Now serving 34 cities, 1,686 system route miles, 9 Douglas DC-3's and 11 Convair 240's, 695 employes.
Chairman: E. Victor Underwood.
President: Robert E. Peach.
Exec. Asst. to Pres.: Helen R. Thomas.
VP-Gen. Counsel: John R. Carver.
VP-Ops.: Carl A. Benscoter.
VP-Sales: Thomas J. Kirkup.
VP-Research: David E. Postle.
Secretary: Bruce C. McLean.
Treasurer: Frank R. Chabot.
Comptroller: R. J. Longwell.
Gen. Sales Mgr.: Howard W. Ostrum.
Dist. Sales Mgrs.: Western, Maurice M. Evans; Southern Tier, George L. Bright; Metropolitan area, E. D. Evans.
Dir. Personnel: R. V. Stephenson.
Dir. Publicity: Ronald A. Krauss.
Dir. Pub. Affairs: R. T. Sidney.
Gen. Traffic Mgr.: Raymond A. Murray.
Dir. Op. Scheds. & Statistics: R. P. Sherwood.
Dir. Psgr. Scheds. & Tariffs: DeHart B. Clute.
Dr. Flt. Ops.: Robert W. Jenkins.
Dir. Maint. Ops.: Remington R. Taylor.
Supt. Comms.: Emil R. Klusacek.
Dir. Purchasing: Glenn W. Irish.

H. N. Carr

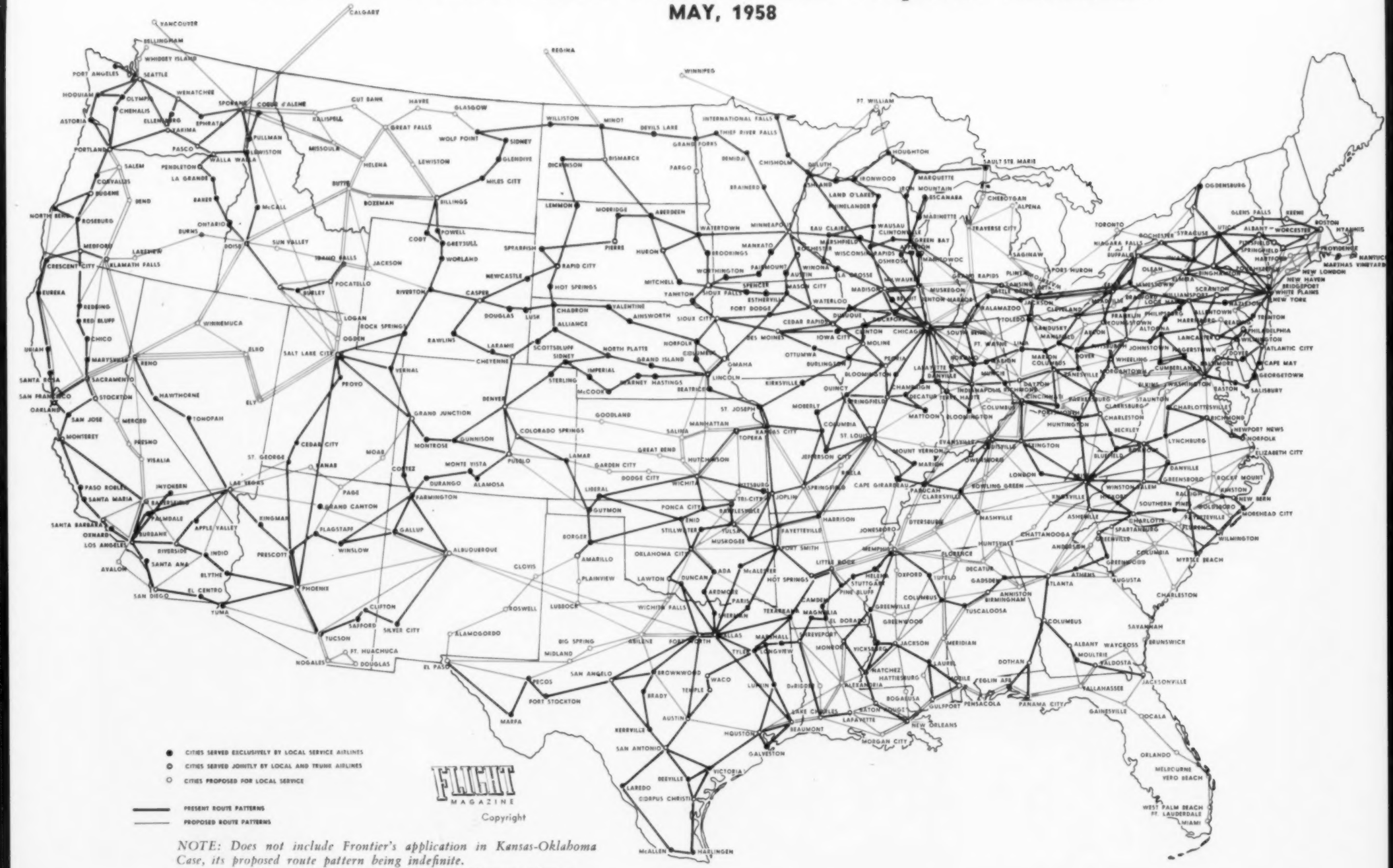
North Central Airlines, Inc.
6201 34th Avenue
South, Minneapolis
50, Minnesota

First scheduled service started Feb. 24, 1948. Now serving 53 cities, 3,471 system route miles, 31 Douglas DC-3's, 1,274 employes.
Chairman: Arthur E. A. Mueller.
President: Hal N. Carr.
VP-Traffic & Sales: F. N. Buttomer.
VP-Ops.: A. D. Niemeyer.
VP-Ind. Rels.: A. E. Schwandt.
VP-Maint. & Engrng.: R. H. Bendio.
Vice President: A. L. Wheeler.
Scty.-Treas.: Bernard Sweet.
Traff. Adm. Mgr.: Robert Erdmann.
Psgr. Svc. Mgr.: John Minerich.
Tariffs & Scheds. Mgr.: C. B. Vesper.
Dist. Sales Reps.: John Hammer, Don LaMont, Jim Palm, Eugene Leonard, Robert Shook, Erling Nasset, Henry Thiele, Richard E. Peterson.
Reg. Spts. Stns.: Robert Baker, Robert Smith.

(Continued on page 70)

Local Air Service Route Pattern With Proposed Extensions

MAY, 1958


CITIES SERVED EXCLUSIVELY BY LOCAL SERVICE AIRLINES
CITIES SERVED JOINTLY BY LOCAL AND TRUNK AIRLINES
CITIES PROPOSED FOR LOCAL SERVICE
PRESENT ROUTE PATTERNS
PROPOSED ROUTE PATTERNS
FLIGHT MAGAZINE
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NOTE: Does not include Frontier's application in Kansas-Oklahoma Case, its proposed route pattern being indefinite.

—(Map and data by E. H. Pickering and Margaret Adams.)

Financial Stability Promising For Locals

By JOSEPH P. ADAMS
Formerly Vice Chairman, Civil Aeronautics Board; presently, General Counsel and Executive Director, Association of Local and Territorial Airlines

THE title of this report is correct only if the reader agrees and believes that financial stability depends in large part on the fulfillment of one or both of the following:

(a) Drastic revision in the approach and application of the present CAB subsidy mail rate policy is imperative;

(b) Economic operating characteristics of local carrier routes must be improved.

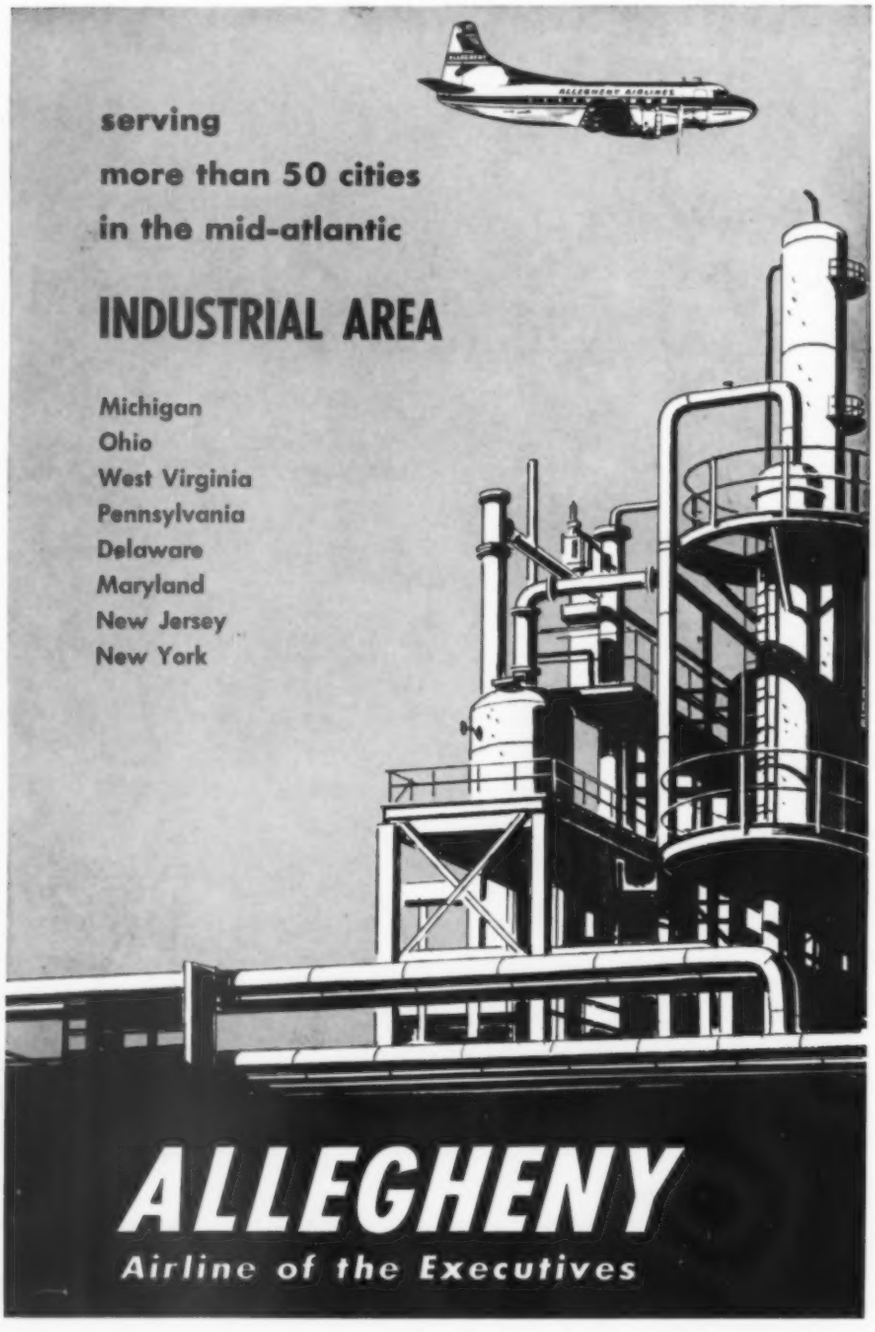
Going directly to the developments for revision of the subsidy mail rate policy, the Association of Local and Territorial Airlines (ALTA), on January 21, 1958, received CAB permission for its members to personally present to the five-member Board what were described as "Notes on Proposed Revision of Mail Rate Policy." Subjects of proposed revision were individually presented by different Washington counsel representing member carriers, and a spirited question and answer period followed.

While this article is not the proper forum for a detailed analysis of the presentation, to be of value, this report must list the skeletal subheadings which are self-explanatory:

1. *The temporary mail rate procedures of the CAB should be revised to permit the fixing of more adequate temporary rates.*
2. *The temporary rate procedures of the CAB should be revised to include, in addition to operating break even need, enough return on investment to permit the carriers to meet interest charges resulting from re-equipment programs.*
3. *Mileage disallowances to follow a fixed experimentation period of six months.*
4. *Mail rates should be based on over-all efficiency, penalizing the carrier where his expenses are high and rewarding the carrier in categories when expenses are low.*
5. *Contract longevity increases recognized in fixing future subsidy mail rates are valid in the light of ten-year local service airline operation.*

We can document our justification for expecting greater stability for the local service airlines, beginning as follows:

In a show-cause order to Mohawk Airlines, Inc., Mail Rates, Docket No. 7277, Order Serial No. E-12139, dated January 24, 1958, the Honorable Louis J. Hector, member of the Civil



LOCAL SERVICE AIRLINES
Comparison of Break Even Needs
(Cents Per Revenue Mile)
1956 - 1957

Carrier	1956	1957	Increase
Allegheny	42.27	47.37	5.10
Bonanza	39.72	46.01	6.29
Central	76.05	78.56	2.51
Frontier	43.71	47.26	3.55
Lake Central	56.60	66.81	10.21
Mohawk	30.10	50.71	20.61
North Central	18.38	30.08	11.70
Ozark	49.86	50.19	0.33
Pacific*	41.57	42.72	1.15
Piedmont	35.38	32.92	(2.46)
Southern	51.00	55.55	4.55
Trans-Texas	44.93	46.23	1.30
West Coast	45.15	46.84	1.69
Average	41.21	46.19	4.98

*Formerly Southwest

LOCAL SERVICE AIRLINES
Comparison of Total Operating Expense
(Cents Per Revenue Ton-Mile)
1956 - 1957

Carrier	1956	1957	Increase
Allegheny	104.9	108.5	3.6
Bonanza	101.9	107.0	5.1
Central	166.3	173.5	7.2
Frontier	92.1	96.9	4.8
Lake Central	130.5	133.7	3.2
Mohawk	93.3	103.9	10.6
North Central	90.1	98.9	8.8
Ozark	118.1	112.8	(5.3)
Pacific*	87.2	83.9	(3.3)
Piedmont	97.1	96.6	(0.5)
Southern	114.1	116.5	2.4
Trans-Texas	112.3	112.3	0.0
West Coast	106.5	101.0	(5.5)
Average	102.8	105.6	2.8

*Formerly Southwest

Aeronautics Board, said in part in a concurring opinion:

"I would like to see the Board construct a set of mail rate standards and procedures whereby the detailed decisions as to the kind and amount of service to be offered could in most cases be removed from the area of detailed government regulation and returned to the area of private business decision. The cold winds of the competitive market, will in the long run, be a far better determinate of the proper quality and quantity of service to be offered the public than detailed decisions of a government agency. In my view, we should strive for a formula whereby local service managements may judge for themselves, within the simple, clear standards of profit and loss, whether to expand service or improve its quality. Such a formula should provide a real economic spur for restricting service on a route where, after a reasonable trial period, minimum standards of need are not established. Conversely, it should provide an incentive to encourage airline management to increase the quantity or improve the quality of service on segments which promise to meet a break even need or show a profit. It is only by thus re-thinking the problem of mail rates so as to provide concrete profit incentives to management that we can hope to stabilize the subsidy bill, which in the light of the area cases, threatens to reach such proportions under current procedures as to jeopardize the very existence of the local service experiment.

"I feel that the Board should no longer delay an attempt to provide genuine profit incentives to the managements of subsidized carriers in order to give them a real drive to increase their earnings and efficiency rather than a mere negative desire to avoid any action which might cause a future disallowance by the rate staff and a mere general desire to get off subsidy some day in the future. There is a great difference between the standards of efficiency which will keep a carrier out of trouble and a mail-rate conference and the self-imposed standards of efficiency of a businessman who sees a real chance to increase the profits of his company. The drive for profits is one of the basic motive forces in the system of free enterprise which has produced the material prosperity and freedom we know in this country

LOCAL SERVICE AIRLINES
Comparison of Revevnue Passengers Carried

Carrier	1956	1957*	% Increase
Allegheny	393,668	456,148	15.9
Bonanza	127,860	154,955	21.2
Central	107,758	123,072	14.2
Frontier	197,902	247,803	25.2
Lake Central	136,956	165,448	20.8
Mohawk	360,369	452,194	25.5
North Central	551,775	680,930	23.4
Ozark	318,994	399,337	25.3
Pacific**	289,240	356,121	23.1
Piedmont	405,153	436,328	7.7
Southern	191,080	216,615	13.4
Trans-Texas	220,613	256,088	16.1
West Coast	214,874	290,882	35.4
Totals	3,516,242	4,235,921	20.5

*Enplaned Passengers
**Formerly Southwest

LOCAL SERVICE AIRLINES
Comparison of Revenue Passenger Miles Flown
1956 - 1957

Carrier	(000) 1956	(000) 1957	% Increase
Allegheny	64,941	77,111	18.6
Bonanza	27,641	33,044	19.5
Central	19,760	23,726	20.1
Frontier	53,300	59,343	11.3
Lake Central	21,368	25,549	19.6
Mohawk	64,708	81,405	25.8
North Central	85,659	106,723	24.6
Ozark	49,013	63,835	30.2
Pacific*	59,398	72,994	22.9
Piedmont	77,136	83,808	8.6
Southern	33,752	38,318	13.5
Trans-Texas	50,184	55,330	10.3
West Coast	38,134	45,128	18.3
Totals	644,994	766,214	18.8

*Formerly Southwest

LOCAL SERVICE AIRLINES
Number of Employees
Year 1957

Carrier	Beginning of Year	End of Year	% Increase
Allegheny	686	850	23.9
Bonanza	315	385	22.2
Central	406	436	7.4
Frontier	680	719	5.7
Lake Central	353	406	15.0
Mohawk	604	727	20.4
North Central	977	1,232	26.1
Ozark	693	774	11.7
Pacific*	417	472	13.2
Piedmont	843	881	4.5
Southern	482	518	7.5
Trans-Texas	680	665	(2.2)
West Coast	428	487	13.8
Totals	7,564	8,552	13.1

*Formerly Southwest

in the great lakes region

the accent is on

SERVICE!

Lake Central Airlines is dedicated to serving the travel needs of the communities in the great lakes area — at the local, national and international levels. Our frequent schedules permit the most convenient inter-city travel — a feature especially popular with businessmen on "interline" flights. You can rest assured your customers will be glad your routing scheduled them on Lake Central Airlines.

weir cook airport indianapolis 44, indiana

lake central
AIRLINES

PIEDMONT AIRLINES...
on the Threshold of a New Era after a Decade of Progress

Within a few months, Piedmont Airlines will inaugurate F-27 Pacemaker service on its system. This new Fairchild-built plane, powered by world-famous Rolls Royce Dart prop-jet engines, will bring the most modern air transportation to cities along Piedmont's 3,290-mile route.

Introduction of F-27 Pacemaker service will come just slightly more than 10 years after Piedmont first started passenger service. Since that first passenger boarded the airline on February 20, 1948, more than two and one-half million passengers have been carried. A record 433,554 passengers were carried by Piedmont in 1957. Load factor for the year was 53.71.

Important to Piedmont's progress in 1957, as in the previous nine years, was a fine interline relationship. Piedmont's contribution to the continued growth of interline business will be aggressive promotion of the benefits of air travel and a flight service reflecting credit on the industry.

PIEDMONT Airlines

Home Office and Operations Base, Smith Reynolds Airport
WINSTON-SALEM, NORTH CAROLINA

today. I see no reason why the Board should not in its mail rate processes utilize this basic motive of the free enterprise system in order to give maximum air service to the public at the minimum subsidy cost. I hope that future consideration of the Mohawk case can be used as an opportunity for the Board to take a significant step ahead in this direction."

This is a report and not an editorial and the reader may evaluate for himself the significance of the above concurring opinion.

Next, in direct relation to the ALTA-CAB presentation of January 21, 1958, the CAB in responding by letter dated April 8, 1958 to the presentation, wrote in part:

"The Board is in strong agreement with your suggestion that through cooperation between the Board's staff and representatives of the local service carriers important improvements in subsidy mail rate procedures, policies, and practices can reasonably be expected to be developed for the Board's consideration and adoption.

"We believe that the only real effective solution to subsidy rate problems will come about through final rate determinations rather than through temporary rates. *We also believe that a general focus on a positive approach towards determining the type and scope of operations to be underwritten as distinguished from a negative approach from the standpoint of mileage disallowances will lead to great improvement from the viewpoint of the Board, public and the industry alike. We hope that ultimately through appropriate procedures and after careful considera-*

(Continued on page 100)

LOCAL SERVICE AIRLINES
Comparison of Average Passenger Loads
1956 - 1957

Carrier	1956	1957	Increase
Allegheny	11.9	12.0	0.1
Bonanza	9.6	10.4	0.8
Central	7.1	7.0	(0.1)
Frontier	9.8	10.6	0.8
Lake Central	9.0	9.2	0.2
Mohawk	15.5	15.3	(0.2)
North Central	10.8	11.2	0.4
Ozark	9.4	10.3	0.9
Pacific*	14.7	16.0	1.3
Piedmont	11.1	11.3	0.2
Southern	9.3	9.8	0.5
Trans-Texas	8.3	8.8	0.5
West Coast	10.5	11.2	0.7
Average	10.7	11.2	0.5

*Formerly Southwest

LOCAL SERVICE AIRLINES
Comparison of Revenue Miles Flown
1956 - 1957

Carrier	1956	1957	% Increase
Allegheny	5,460,875	6,400,107	17.2
Bonanza	2,870,214	3,165,254	10.3
Central	2,785,679	3,368,614	20.9
Frontier	5,421,167	5,583,686	3.0
Lake Central	2,365,966	2,781,004	17.5
Mohawk	4,178,448	5,311,389	27.1
North Central	7,900,015	9,494,901	20.2
Ozark	5,225,986	6,173,685	18.1
Pacific*	4,048,797	4,551,716	12.4
Piedmont	6,952,278	7,424,438	6.8
Southern	3,616,354	3,901,046	7.9
Trans-Texas	6,056,996	6,271,605	3.5
West Coast	3,646,541	4,030,658	10.5
Totals	60,529,316	68,458,103	13.1

*Formerly Southwest

1,900 Hrs. For Dart Overhauls

THE Canadian Department of Transport has extended to 1,900 hours the approved overhaul life of the Rolls-Royce Dart propeller-turbine engines which power Trans-Canada Airlines' Viscount aircraft. Application will be made in the near future for a 2,000-hour overhaul life.

This is by far the longest period between overhaul granted by any country's licensing authority for a gas-turbine engine. Only one piston engine, the Wright BD-1, which has been in service longer than the Dart, has a higher approved life between overhauls.

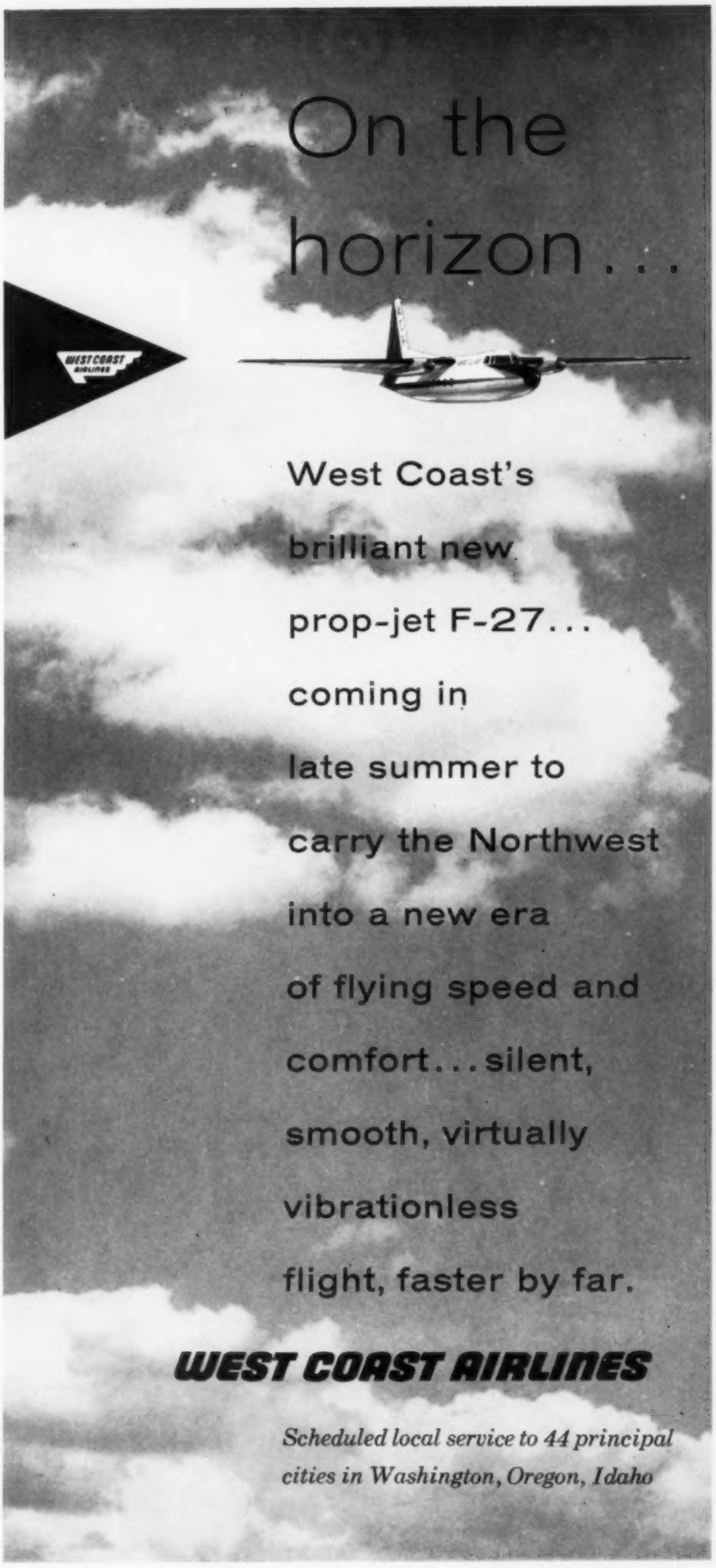
When TCA started Viscount operations in April, 1955, the approved overhaul life of the Dart was established at 1,050 hours. It was raised to 1,400 hours in December, 1955, to 1,500 hours in July of 1957, 1,600 in October, 1,700 in December, 1,800 in January, 1958 and 1,900 in February.

The second highest Dart overhaul life has been established in the U. S., where the Civil Aeronautics Board granted a 1,050 period at the start of Capital Airlines' Viscount operation in July, 1955. This was raised to 1,400 hours 6 months later, to 1,500 in January, 1957, and to 1,600 last December.

These advances have been made possible by the very low engine failure rate. The rate of failures which were the responsibility of Rolls-Royce was .09 per thousand engine hours flown by TCA since the start of their Viscount operation until the end of last year, while the corresponding figure for Capital was even lower, at .04.

These figures have been compiled in respect of two steadily expanding fleets. TCA received their first Viscount in December, 1954. A year later they had 14. By the end of 1956, 18 had been delivered, and the total had risen to 31 by last December. By the spring of 1959, the fleet will comprise 51 aircraft. Capital took delivery of their first Viscount in June, 1955, had received seven by the end of that year, 54 by December, 1956, and were at full strength, with 60 delivered, by March of last year.

Data for 1957 shows that scheduled TCA Viscount flights continued to increase as more aircraft came in service. When the peak summer schedule was put into operation, there were 177 de-


On the horizon...
WEST COAST AIRLINES
West Coast's brilliant new prop-jet F-27... coming in late summer to carry the Northwest into a new era of flying speed and comfort... silent, smooth, virtually vibrationless flight, faster by far.
WEST COAST AIRLINES
Scheduled local service to 44 principal cities in Washington, Oregon, Idaho

partures daily covering just under 60,000 miles over a network of routes extending from coast to coast. During the year, TCA Viscounts accumulated 295,562 engine hours at an average daily aircraft utilization of 7:40 hours, bringing the cumulative total to 561,-534 hours.

Capital passed the one million mark during 1957, accumulating 717,360 hours during the year at an average daily utilization of 8:20 hours. The cumulative total at the end of the year was 1,049,440 hours. During the peak summer service, there were 376 departures daily, covering just under 130,000 route miles.

Cubana Airlines operated their three Viscounts for a total of 24,321 hours during the year, while five executive versions of the aircraft were in use — four with U. S. corporations and one with the Department of Transport in Canada.

To complete the Viscount picture as it now stands, in April Continental Airlines received the first of 15 aircraft ordered, and delivery will be complete by September. They anticipate replacing the 1,800-shaft-horsepower Mark 525 engines with the 2,100-shp. Mk. 541 when these engines become available, and by so do-

(Continued on page 100)

"Frontier Vacationland"

. . . all served by one airline

"Vacations West" are more popular than ever this year. National Parks and National Forests— from Yellowstone to Grand Canyon—all easily reached by Frontier Airlines (good connections with all transcontinental airlines).

fly **FRONTIER**

AIRLINES

DIRECTORY

(Continued from page 64)

Pub. Rels. Mgr.: Donald C. Wright.
Machine Acct. Sup.: W. E. Wolf.
Acctng. Sup., Gen.: Dan May.
Properties Mgr.: John Dow.
Purchasing Agent: Gordon Bullis.
Supt. Stations: T. M. Needham.
Chf. Flt. Supt.: Joseph Sims.
Chf. Stewardess: Kathy Leddick.
Chf. Pilot: G. F. Wallis.
Supt. Maint.: Robert L. Gren.
Overhaul Supt.: G. Roycraft.
Electronics Supt.: A. Warner.
Sup. Reservations: Marvin J. Freund.
Wash. Counsel: A. L. Wheeler.

L. H. Hamilton

Ozark Air Lines, Inc.
Lambert Field
St. Louis 21, Mo.

First scheduled service started Sept. 26, 1950. Now serving 48 cities, 3,556 system route miles, 20 Douglas DC-3's, 800 employes.
Chairman & Pres.: Laddie H. Hamilton.
VP.: Arthur Blumeyer.
Gen. Mgr.: Joseph FitzGerald.
Treasurer: Floyd W. Jones.
Secretary: Arthur G. Heyne.
Dir. Pub. & Intrln. Rels.: Paul J. Rodgers.
Dir. Adv. & Pub.: Francis M. Higgins.
Adv. Mgr.: Earl E. Bowman, Jr.
Ops. Mgr.: F. E. Myers.
Psgr. Svc. Mgr.: Tom Keyes.
Gen. Traffic Mgr.: C. L. Tabor.
Traffic Mgr.: Henry L. Sweezy; **Asst.:** D. G. Weishaar.
Gen. Sales Mgr.: S. F. McCullough.
Reg. Mgrs.: Dean Holscher, Northeast; Richard Hannon, Central; E. A. (Joe) May, Northwest; Charles Johnson, Southwest; Vince R. O'Brien, Southeast.
Supt. Maint.: Ellwyn E. Boock.
Supt. Comms.: Phillip L. Newell.
Supt. Flt. Ops.: Julian A. Wiggins.
Supt. Stations: C. C. Mounts.
Chf. Flt. Supt.: Wm. E. Enochs.
Comptroller: Edward J. Crane.
Chf. Accountant: Charles Owen.
Pur. Agent: Rex E. Creighton.
System Res. Mgr.: Mrs. Connie Mounts.
Legal Counsel: James Verner and James Batchelor.

J. H. Connelly

Pacific Air Lines, Inc.
San Francisco International Airport
San Francisco, Calif.

First scheduled service started Dec., 1946. Now serving 33 cities, 1,896 system route miles, 11 Douglas DC-3's and 7 Martin 202's, 477 employes.
Chairman: Leland Hayward.
President: John H. Connelly.
Exec. VP: T. R. Mitchell.
VP-Tfc.-Sales: R. E. Costello.
VP-Pub. Relations: M. A. King.
Treas.: R. E. Dahl.
Pur. Agent: A. W. Slater.
Gen. Sales Mgr.: J. Carl Ferrell.
Dir. Flt. Ops.: R. Couk.
Flt. Supt.: Wm. G. Hall.
Chf. Stewardess: Mrs. Sheryl Woods.
Dir. Maintenance: D. Davison.
Supt. Maintenance: Arnold Boller.
Dir. Comms.: Odis Burris.
Wash. Counsel: Robert Redding, and T. I. Seamon.

Tom Davis

Piedmont Airlines
Smith Reynolds Airport,
Winston-Salem 1, N. C.

First scheduled service started Feb. 20, 1948. Now serving 50 cities, 3,027 system route miles, 21 Douglas DC-3's, 1,019 employes.
Pres. & Treas.: T. H. Davis.

Vice Presidents: C. G. Brown, Jr., H. K. Saunders, R. S. Northington (fixed-base division).
Scty., Asst. Trsr.: M. F. Fare.
Controller: T. W. Morton.
Gen. Sales Mgr.: W. G. McGee.
Gen. Traffic Mgr.: R. E. Turbiville.
Dir. Scheds., Trfs.: F. P. Lincoln.
Dir. Sales Prom.: H. B. Slater.
Dist. Sales Mgrs.: J. L. Wathen, D. G. Edmondson, R. J. Miller, G. W. Bennett, H. L. Warner, J. A. Humphreys, S. C. Folger.
City Sales Mgr.: P. D. Loar.
Sales Rep.: W. A. Crowe.
Supt. Stations: K. E. Ross.
Div. Station Supervisors: E. T. Best, C. B. Nutt, P. P. Jones, T. R. Cowen.
Mgr., Rev. Acctng.: F. G. Bates.
Pur. Agent: W. W. Barber.
Chf. Pilot: F. C. Nicholson.
Supt. Psgr. Svc.: S. S. Brunt.
Supt. Maint.: H. M. Cartwright.
Supt. Comms.: L. A. Watson.
Asst. to VP: J. W. Lewis.
Sup. Grnd. Ops.: W. A. Blackmon.
Gen. Counsel: Kilpatrick, Ballard & Beasley.

F. W. Hulse

Southern Airways, Inc.
Atlanta Airport
Atlanta, Ga.

First scheduled service started June 10, 1949. Now serving 30 cities, 2,019 system route miles, 13 Douglas DC-3's, 515 employes.
President: Frank W. Hulse.
Vice President: Ike F. Jones.
VP-Sales: C. M. Britt.
VP-Ops.: W. S. Magill, Jr.
Secty-Treas.: Geo. F. Estey.
Asst. Treas.: C. H. D. Tarrer.
Sales Prom. Mgr.: A. D. Yawn.
Dir. Mil. Transpt.: M. W. Nolan.
Supt. Psgr. & Flt. Svc.: G. H. O'Brien.
Dist. Sales Mgrs.: Harold Goodson, R. E. Kale, Perry Wingo, J. O. Lasseter and Ben E. Bowie.
Traff. Mgr.: Fred A. Shine.
Acctng. Sup., Gen.: R. W. Burden.
Dir. Research: J. K. Courtenay.
Pur. Agent: R. C. Suttles, Jr.
Personnel Dir.: R. W. DesRochers.
Sup. Print Shop: Oliver Harris.
Supt. Stations: George F. Attwood.
Chief Pilot: W. B. Brubb.
Chf. Stewardess: Mrs. Barbara Spires.
Supt. Maint.: George Cross.
Chf. Insp.: Fred McMickle.
Chief Dispatcher: Truman Terry.
Supt. Comms.: W. C. Weigle.
Supt. Reservs. & Tck. Offices: D. R. Hankins.
Corp. Counsel: William B. White, Jr.
Wash. Counsel: Cecil A. Beasley, Jr.

R. E. McKaughan

Trans-Texas Airways
Municipal Airport
Houston, Texas

First scheduled service started Oct. 11, 1947. Now serving 41 stations, 60 cities, 3,816 system route miles, 20 Douglas DC-3's, 696 employes.
President: R. E. McKaughan.
VP-Pub. Affairs: J. K. Ayer.
VP-Traffic & Sales: L. J. Eichner.
VP-Ops.: H. E. Erdmann.
VP-Purchasing: W. C. Leatherwood.
VP-Personnel: Phil Reid.
Asst. to VP-Ops.: C. L. Baker.
Asst. to VP-Tfc.-Sales: Jack Howe.
Treas.: M. L. Muse.
Assoc. Counsel: R. E. McKaughan, Jr.
Gen. Sales Mgr.: B. K. Gover.
Mgr. Interln. & Agency Sales: J. W. Beck.
Dist. Sales Reps.: J. A. Allbright, Houston; W. W. Blanton, Dallas; C. P. Briggs, San Antonio; K. P. Banff, Valley; J. B. Fleming, Shreveport; K. Daugherty, Beaumont-Pt. Arthur; T. Kamel, Austin.
Pub. Rels. Asst.: Bill Newkirk.
Chf. Accountant: H. H. Farr.
Mgr. Tariffs: G. J. Barbier.
Acctng. Sup., Rev.: A. C. Sandifer.
Mgr. Stores: F. C. Buck.
Mgr. Mach. Acctng.: T. K. Phelan.
Sup. Print Shop.: M. M. Kelly.
Mgr. Research: J. C. Crawford.
Supt. Stations: J. L. Herring; **Assts.:** W. W. Franklin, T. O. Brinkley, Marcus Kyle.
Chf. Pilot: L. A. Downes.
Chf. Dispatcher: W. J. Schoen.
Dir. Psgr. Svc.: J. Rupe.
Dir. Maint.: H. P. Whatley.
Supt. Maint.: T. O. Weathers.
Supt. Comms.: E. W. Helken.
Sup. Reservations: M. O. Poupart.
Wash. Counsel: V. L. Gingerich.

Nick Bez

West Coast Airlines, Inc.
Boeing Field
Seattle 8, Wash.

First scheduled service started Dec. 5, 1946. Now serving 44 cities, 2,200 system route miles, 14 Douglas DC-3's, 500 employes.
President: Nick Bez.
VP-Plng. & Engrng.: E. B. Code.
VP-Comm. & Pub. Rels.: Tom Croson.
Dir. Sales: R. L. Snead.
Dist. Sales Mgrs.: C. Dils, Jr., Seattle; Lyle Elwood, Boise; L. W. Rostad, Portland; Joe Smith, Yakima.
Trfc. Mgr.: R. E. Hill.
Adv.-Pub. Rels. Mgr.: Douglas C. Billmeyer.
Scty-Compt.: L. J. Hawkinson.
Asst. Treas.: Kenneth N. Laurin.
Pur. Agent: Morris Johnson.
Pers. Dir.: John S. Beard.
Empl. Mgr.: Robert S. Heath.
Ops. Dir.: S. R. Severtson.
Grnd. Ops. Mgr.: Harold G. Scull.
Chf. Pilot: D. C. Burkhard.
Dir. Mtnc. & Overhaul: S. M. Selby.
Supt. Flt. Control & Communications: H. E. Wallis.
Manager Passenger Service: Boyd O. Baker.
Reservations Manager: Clyde Kostenbader.

. . . **smallest PACITRON unit is biggest fuel gaging news . . .**

Simmonds now offers the newest addition to its famous PACITRON Fuel Gage family . . . a small lightweight *transistorized* fuel gage for military and transport aircraft. It is highly dependable and accurate. The replacement of vacuum tubes by transistors permits Simmonds to incorporate amplifier-bridge and indicator into a single smaller unit, saving space and weight.

Simmonds packages three types of PACITRON Fuel Gage systems, custom-built for every requirement: the new 2-unit transistorized gage, the well-known 2-unit vacuum tube gage, and the lightweight 3-unit system. Along with dependable fuel measurement, *ALL* PACITRON systems provide important fuel *management* functions such as Center of Gravity Control, Level Switching, Totalization, Telemetering and Load Limit Control. All systems meet MIL specs.

Complete information on all the above systems is available on request.

Miniaturized indicator-amplifier-bridge and lightweight free flooding tank unit.

Simmonds AEROCESSORIES, INC.

General Offices: Tarrytown, New York

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Simmonds Aerocessories of Canada Limited, Hamilton, Ontario

NEW ERA DAWNS

(Continued from page 50)

intermediate towns should be curbed despite the heavy pressure on the locals to improve their income and cut their subsidy requirements that mount up from unprofitable towns. We have always held to the conviction that the locals should do everything possible to expand air service to more smaller cities — not drop those they already have. Permission to operate non-stop services between the larger towns should not carry with it the freedom to kick off the little intermediate stops altogether.

There is real urgency in this matter of flexibility. Special cases demand special treatment and the local service route structures are overflowing with special cases. It is unfortunate that we can not re-arrange the geography of the country and come up with ideal operating schedules between re-located towns and cities so we can have strong terminals at the end of each route segment. But the towns and cities are fixed. The locals must provide service to the principal points the local people want to go. The Civil Aeronautics Board will have to face up to these inescapable facts of life concerning more flexibility in local airline schedules. The question is, "When?"

LOCAL SERVICE AIRLINES
Number of Scheduled Aircraft
4th Quarters, 1956 and 1957

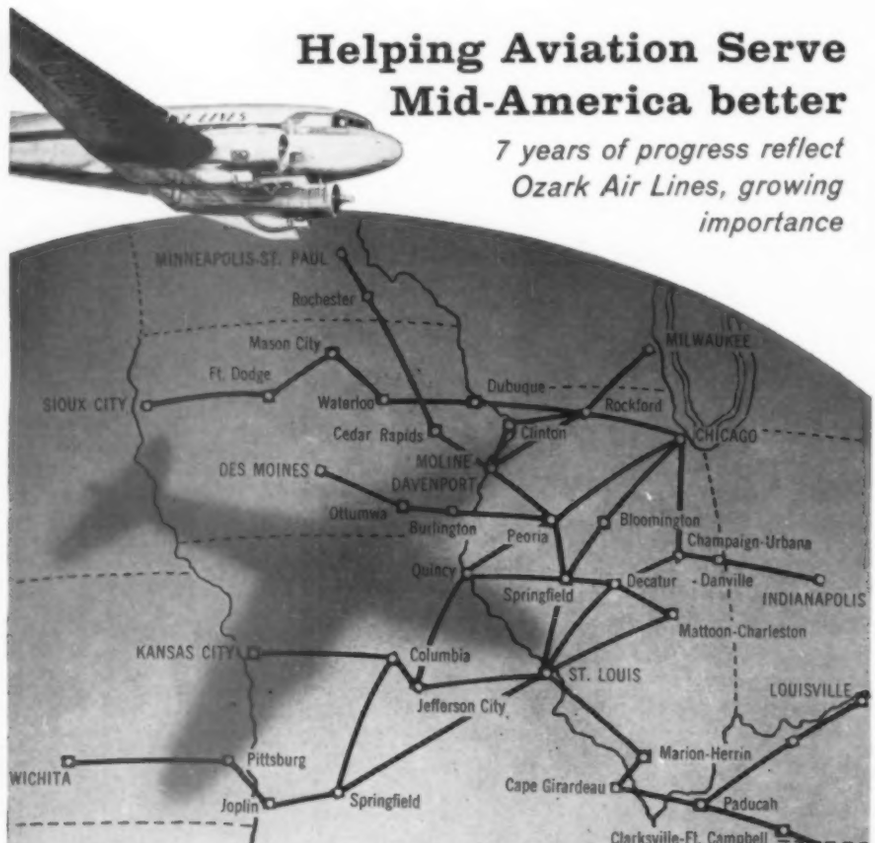
Carrier	1956	1957	Increase
Allegheny	20	22	2
Bonanza	9	10	1
Central	11	13	2
Frontier	13	16	3
Lake Central	10	10	0
Mohawk	13	22	9
North Central	21	27	6
Ozark	19	20	1
Pacific*	13	18	5
Piedmont	20	21	1
Southern	13	13	0
Trans-Texas	18	20	2
West Coast	14	14	0
Totals	194	226	32

*Formerly Southwest

New Rate Approach Expected

Now to that horrid word "subsidy." For the ten-year period ended December 31, 1956, the locals reported an aggregate net loss of around $6 million. At the present time the industry is still running at a loss, the average being 1.11 cents per mile in 1957. Only three carriers made a profit last year with Trans-Texas leading at 2.74 cents per mile. This amounts to about $170,000 profit for Trans-Texas, which is not much of a return on its investment and may have artificially come about by lump-sum mail payment adjustments from previous years. The aggregate loss for the lines in '57 was about $750,000.

There is no industry in this nation, government regulated or not, subsidized or not, that has to operate under an impossible formula such as dictated by the Civil Aeronautics Board. Not only does the staff in Washington arbitrarily disallow all sorts of legitimate expenses of the carriers, which expenses have to be charged against profit or capital, but profits are limited by the application of a concept of return on investment being restricted to the depreciated value of



Helping Aviation Serve Mid-America better

7 years of progress reflect Ozark Air Lines, growing importance

Adding more flights . . . serving more cities . . . modifying its fleet for still greater safety, comfort, and economy . . . all are a part of the progress at Ozark during the past seven years. Much of this progress was in the year just past. The number of passengers flown increased 25 per cent in 1957. More than 6,000,000 miles were flown, exceeding 1956 mileage by 23 per cent. Ozark flew air express and air freight last year, too . . . and carried well over 4,000,000 pounds. New routes include service to Cedar Rapids, Rochester, and Minneapolis-St. Paul. Working closely with connecting air lines, Ozark's constant endeavor is to bring better service to its cities and passengers.

OZARK AIR LINES

THE BUSINESSMAN'S AIR LINE SERVING MID-AMERICA

General Offices: Lambert Field, St. Louis, Missouri

PASSENGERS • AIR MAIL • AIR EXPRESS • AIR FREIGHT

LOCAL SERVICE AIRLINES
Comparison of Total Revenue Ton-Miles Flown
1956 - 1957

Carrier	1956	1957	% Increase
Allegheny	6,569,553	7,826,483	19.1
Bonanza	2,910,702	3,312,115	13.8
Central	2,033,980	2,436,625	19.8
Frontier	6,431,653	6,747,030	4.9
Lake Central	2,130,759	2,641,417	23.9
Mohawk	6,469,684	8,253,058	27.6
North Central	8,775,078	10,843,896	23.6
Ozark	4,980,197	6,584,376	32.2
Pacific*	5,909,876	7,206,535	21.9
Piedmont	7,854,801	8,474,141	7.9
Southern	3,488,081	3,919,780	12.4
Trans-Texas	5,293,370	5,823,430	10.0
West Coast	3,626,285	4,445,150	22.6
Totals	66,474,019	78,514,036	18.1

*Formerly Southwest

LOCAL SERVICE AIRLINES
Comparison of U. S. Mail Ton-Miles Flown
1956 - 1957

Carrier	1956	1957	% Increase
Allegheny	86,867	100,690	15.9
Bonanza	49,162	51,151	4.0
Central	46,835	50,205	7.2
Frontier	343,405	214,637	(37.5)
Lake Central	26,594	32,900	23.7
Mohawk	63,197	72,362	14.5
North Central	226,220	255,460	12.9
Ozark	115,452	133,777	15.9
Pacific*	95,993	113,555	18.3
Piedmont	172,230	161,235	(6.4)
Southern	101,542	115,057	13.3
Trans-Texas	161,719	166,460	2.9
West Coast	47,240	52,693	11.5
Totals	1,536,456	1,520,182	(1.1)

*Formerly Southwest

the *owned* assets plus 90 day working capital! No wonder prospective investors jump and run when they discover the unique system imposed by the CAB on local carriers.

But CAB Member Hector's dissent in the Mohawk mail rate case and the remarks of Chairman Durfee, mentioned above, indicate that the Board will now try to come up with a new approach. It is a complicated problem and there is no unanimity of opinion on the solution. The carriers themselves do not have a single solid front organization, representing all of them and going down the line for a specific new formula. The Board members themselves know very little about the working of mail rates and the experts at staff level in the Board honestly believe what they have been doing in the past is completely within reasonable interpretation of the Civil Aeronautics Act. It will be difficult to devise a formula that will apply fairly to each carrier without special considerations for the peculiarities involved in each operation. It is normal that some carriers will do a better job than others and should be rewarded for efficiency.

It is true that some carriers have better route structures than others and that the whole picture is filled with all sorts of variables. Such standard measures as flight cost per mile or per hour or per ton mile costs per mile can not be applied without allowing for the many differentials in the operations. Making such allowances is a matter of good judgment. It is historical fact that when the trunk lines were on subsidy they learned how to maneuver the Post Office Department and later the CAB to grant higher subsidies. History is being repeated as the locals well know they can not continue without a period of higher subsidies. And it now seems clear the Board realizes additional subsidizes must be an integral element in the new approach to make the locals ultimately a self-sufficient member of the air transport family. All progress will begin at this point. Permit them to make some money, then equity capital will flow into their operations, permitting them to re-equip with late-model aircraft, provide the service they were organized and certificated to provide and allow the stockholders some dividends for a change.

Congress Helps

Two new laws recently enacted by the Congress will help materially in the very necessary re-equipment program. Public Law 85-307 empowers the Civil Aeronautics Board to guarantee loans on aircraft up to $5,000,000 to any one local or territorial airline. The guarantee may not exceed more than 90% of the loan and the loan cannot exceed more than 90% of the purchase price of the equipment. Bonanza Air Lines was the first to qualify for a loan under this new law. However they were turned down twice and the paper work and extra effort involved in justifying the loan was reported to be outlandish and sufficient to discourage even a Philadelphia lawyer. It appears that the Board is bending over backwards to over-protect the taxpayer's money, or perhaps to over-protect themselves in fear of the outside chance a carrier might default and embarrass them.

Public Law 85-295 amended the Federal Bankruptcy Act and offers lenders on aircraft the same protection as lenders on railroad rolling stock now have. This legisaltion makes loans on aircraft more attractive to lenders and helps long term leases and conditional sales arrangements.

There is a good chance that capital gains bills will be passed at this session of Congress, permitting the carriers to retain capital gains made on used equipment. One of the many reasons why some of the carriers have been hamstrung financially is because in

MOHAWK Airlines Inc.

29% MORE OPERATING HOURS WITH Airwork OVERHAULED ENGINES

During the first 4 months of 1957, we averaged 776 operating hours per engine with 64.7% utilization. The engines came from 3 different overhaul shops. Individual engine performance records persuaded us to switch exclusively to Airwork.

During the last 4 months of 1957, when 50% of the engines on our fleet of 11 convairs were Airwork overhauls, average operating time increased to 1043 hours, with 86.9% utilization. This time is expected to increase as all our engines become exclusively Airwork overhauled.

E. A. "BUD" BUTTERFIELD
Supt. of Maintenance

R. R. TAYLOR
Director of Maintenance

Distributed by Airwork

BRANCHES IN
NEWARK WASHINGTON MIAMI ATLANTA CLEVELAND

Airwork CORPORATION
Millville, New Jersey

MOHAWK leads
the short haul industry
Cosmopolitan
Fly MOHAWK
In mid-1958 MOHAWK AIRLINES will move into its $3,000,000 Headquarters Plant at the Oneida County Airport, Utica-Rome, New York.

The plant, of double cantilever construction, includes two 120′ by 300′ hangars capable of housing up to fourteen modern transport planes, with 140,000 square feet of supporting shop and office facilities.

This will be one of the most modern airline maintenance facilities in the United States, and is designed for ready expansion as the Company's growth continues.

Designed for efficiency and strategically located, this structure—as shown below—is another indication of how MOHAWK builds to serve!

NEW HEADQUARTERS PLANT: ONEIDA COUNTY AIRPORT • UTICA-ROME, NEW YORK

MOHAWK
AIRLINES
The Route of the Air Chiefs
EXECUTIVE OFFICES: UTICA, NEW YORK

selling off used equipment, resulting in capital gains, the Board has usually applied the gain as an offset to subsidy needs of the carrier in order to recapture some of this potential profit. Yet the railroad lobby launches charges of "paternalism" against aviation!

One of the brightest stars on the horizon is the beginning of the re-equipment program now that several carriers have placed orders for the turbo-prop Fairchild F-27. Some dangerous thinking on the CAB staff level is evident in approving equipment loans under the new guarantee loan legislation. This thinking is that unless the carrier is going to reduce subsidy the loan should not be approved. They forget that there are many cases where convenience and necessity require a better quality of air service than can be supplied by DC-3 equipment even though the service might cost a little more.

Impact of New Planes, New Routes

Every bit of evidence points to the fact that the F-27 and other aircraft coming along ultimately will lower subsidy requirements. These new planes will cost from 12 to 15 cents per mile more to operate than the DC-3 but on most routes the sales appeal of new equipment will generate enough additional traffic to defray the added expense. The average air traveler today is simply not going to get into the modern airliners being bought by the trunks and transfer to a DC-3. Let's face it. The locals must reduce the competition with the personal automobile. The F-27 holds this promise.

Perhaps the best piece of news to hit the local service airline industry was the Board order on the Seven States area case released in May. Not only does this momentous decision suggest early action on other area cases long pending but in a single stroke the CAB added more cities and route miles than have been granted totally in the last six years. Between 1951 and 1957 total local service route miles increased from 24,991 to 25,563. The Seven States case alone (and in one decision) added about 8,000 unduplicated route miles. From 1951 to 1957 the net increase in number of cities served was 65. The Seven States decision added 55.

Veteran readers of FLIGHT MAGAZINE's economic and policy studies of the local air line industry for the past nine years will no doubt be surprised at the optimistic notes contained in this round-up of current developments in the industry. Our previous discussions have been highly critical and for the most part on the gloomy side. We

believe this expression of optimism is based on fact. And out of the bits and pieces of encouraging evidence coming from Washington we're convinced that the Civil Aeronautics Board will change its philosophy so that our territorial and local airlines might operate with more flexibility and with profit incentive.

We are confident, too, that intelligent airline management and the communities they serve will do their part in the new era that may be dawning for short-haul scheduled air transport. Apathy on the part of the communities and short-sighted opportunism on the part of airline management will seriously deter the profit and progress that seem just around the corner.

CAPITAL FOR LOCALS

(Continued from page 52)

ment's policies, particularly those affecting rates.

(c) The attitude of the Federal government particularly as it affects rate regulation should be as orthodox as possible with respect to rate of return. The rules should encourage able management and discourage poor management.

In summary, the local service airlines now find one of their major problems is to enter the market for capital. Their needs will be so great in the coming years that the government's guarantee of loans and the availability of capital gains will not be sufficient to meet the needs of the industry. I think that the regulation must be clearly understood and simply stated, management must plan far in advance, and the rates must permit an adequate return for the investor.

Finally, lenders are human. They like to be paid back quickly on a poor risk, and they would prefer never to be paid back by the best risk, but rather have their money continue to work. To a lender the most attractive borrower is a top credit that is growing so fast that it continually needs more money, and to whom increased loans can be justified by the growth in assets and net earnings.

I think the local service airlines can be qualified as a most attractive borrower. Eighty per cent or better of their customers are businessmen, and their increasing use of the airlines has put their stamp of approval on the service. The businessmen, in turn and to a great extent, determine the flow of capital.

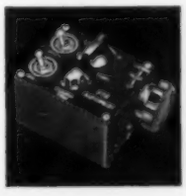
Set the rules of the game so they are easy to understand and so they make the game profitable to good management, and capital will freely flow toward the local service airline industry.

makes long "On Top", rough air, X-country and IFR flights safer, easier!

Having hands free to copy clearances, use charts, study approach plates, work radios, etc., is possible with almost any autopilot but—the important thing is knowing *which* autopilot to buy! The Federal Tubeless Autopilot offers the only new concept in up-to-date autopilot design. In addition to being a true 3-axis autopilot, Federal is of simple trouble-free electro-mechanical design assuring highest reliability and lowest maintenance cost compared to all other types. For *extra utility* from your aircraft (and resulting lower cost of operation), buy Federal—the tubeless autopilot with the easiest "set up and go"—"ready to get up and go" features for maximum in-flight benefits and minimum down-time delays! Remember—*the most valuable extra hands in the cockpit are your own*—set them free from the controls with Federal and arrive fatigue-free wherever you fly!

Federal **Tubeless Autopilot**

For your free illustrated copy of "Freehand Flight" brochure, write: Industrial Products Division, International Telephone and Telegraph Corporation, 15191 Bledsoe Street, San Fernando, California.



The Federal Autopilot is CAA certificated for the Aero Commander, Beech Bonanza and Twin Bonanza, Cessna 172, 180, 182, 310 and Piper Apache.

Industrial Products Division INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION

1957 Traffic Record at Local Service Stops

(Continued from page 59)

Rank 1957	Rank 1956	City and State	Carrier	Passengers Boarded 1957	Passengers Boarded 1956	Percent Change 1956/57	Passengers Boarded Per Departure
303	268	*Greenwood, S. C.	SO	1,355	1,677	—20	1.10
304	306	*Burley, Idaho (5)	WC	1,337	970	37	.86
305	264	Bismarck, N. D. (5)	FL	1,332	1,774	—25	2.45
306	295	*Mattoon, Ill. (5)	OZ	1,332	1,214	9	1.42
307	288	*Brownwood, Texas	TT	1,314	1,335	— 2	.95
308	....	*Apple Valley, Calif. (1)	BL	1,276	.....	.....	2.43
309	298	*Winona, Minn.	NO	1,272	1,166	9	.97
310	303	*Olympia, Wash.	WC	1,260	1,013	24	1.86
311	286	*Miles City, Mont.	FL	1,249	1,376	—10	1.15
312	299	*Gunnison, Colo.	FL	1,247	1,160	7	1.08
313	314	*Thief River Falls, Minn.	NO	1,243	875	42	1.07
314	....	*Norfolk, Neb. (1)	NO	1,227	.....	.....	1.55
315	364	*Riverside, Calif.	BL	1,217	129	.....	2.20
316	320	Keene, N. H.	MO	1,201	790	52	1.21
317	281	*Glendive, Mont.	FL	1,198	1,471	—19	1.14
318	....	*Harrison, Ark. (1)	CN	1,076	.....	.....	1.70
319	317	*Monte Vista, Colo.	FL	1,032	821	25	.80
320	....	Sioux Falls, S. D. (1)	NO	1,024	.....	.....	1.22
321	304	*Southern Pines, N. C. (3) (5)	PI	1,015	980	3	1.72
322	333	Waco, Texas	TT	1,005	664	51	1.60
323	326	*Safford, Ariz.	FL	984	733	34	1.36
324	315	Camden, Ark.	TT	961	874	9	.75
325	335	*Powell, Wyo.	FL	943	661	42	1.37
326	302	*Yreka, Calif.	PC	924	1,069	—14	1.52
327	352	*Rawlins, Wyo.	FL	879	430	104	1.33
328	....	*Cape May, N. J. (3) (5)	AL	872	.....	.....	5.19
329	307	*Pittsburg, Kan.	OZ	872	958	— 9	.84
330	310	Danville, Va.	PI	849	931	— 9	1.37
331	318	*Beeville, Texas	TT	822	817	0	.39
332	308	El Paso, Texas	TT	821	947	—14	2.59
333	340	*Land O'Lakes, Wis. (3)	NO	821	582	41	3.20
334	312	*Kerrville, Texas	TT	814	903	—10	.60
335	259	*Sherman, Texas	CN	780	1,887	—59	.75
336	309	*Stillwater, Okla.	CN	771	938	—18	1.32
337	350	Temple, Texas	TT	759	450	68	1.22
338	321	*Easton, Md.	AL	739	783	— 6	1.46
339	327	*Ontario, Ore.	WC	726	726	0	1.06
340	358	*Sidney, Mont.	FL	716	714	0	1.00
341	325	*Magnolia, Ark.	TT	706	736	— 5	.56
342	319	*Lock Haven, Pa.	AL	693	810	—15	1.00
343	332	*Marfa, Texas (5)	TT	657	664	— 2	1.02
344	....	Toledo, Ohio (1)	LC	647	.....	.....	.66
345	311	Baltimore, Md.	AL	614	931	—35	1.26
346	346	*Ellensburg, Wash.	WC	610	489	24	.71
347	344	*La Grande, Ore.	WC	599	524	14	1.04
348	348	*Tonopah, Nev.	BL	589	456	29	.95
349	323	*Ada, Okla.	CN	586	755	—23	1.09
350	336	*Greybull, Wyo.	FL	563	658	—15	.95
351	305	*Ardmore, Okla.	CN	550	978	—44	1.00
352	322	*Dickinson, N. D.	FL	549	769	—29	.54
353	341	*Baker, Ore.	WC	539	562	— 5	.81
354	343	*Pecos, Texas	TT	539	546	— 2	.84
355	....	*Guymon, Okla. (1)	CN	538	.....	.....	.85
356	338	*Cumberland, Md.	AL	531	596	—11	1.70
357	342	*Fort Stockton, Texas	TT	524	547	— 5	.71
358	351	*Marshall, Texas	TT	522	438	19	.43

(Continued on page 114)

Locals Push Hard-Sell On Many Fronts

WHEN it comes to selling service, the local service airlines top all industries in workaday sales effort. This readily becomes apparent when the sales activities of any one of the thirteen local carriers are examined closely. Every employe of every local airline interests himself in selling every day, everybody, from the president on down the line. This saturation of sales effort is as much a fixture in a local airline's operation as are its airplanes, pilots, ramp workers and maintenance experts. This is true because the so-called "hard-sell" had to be adopted by the local carriers from their very beginning — only constant sales pressure could mean survival for a secondary air transportation system clearly established on a trial or "use it or lose it" basis.

Typical of the intense selling performed by the local service industry is the program followed by Southern Airways, whose philosophy reflects that of all thirteen carriers. It is

Serving **22** *resort cities*

in **4** *Western States* CALIFORNIA ARIZONA NEVADA AND UTAH

during its **12** *th year of service,*

Bonanza **Bo+** *Air Lines wishes to thank those with whom it is connected:*

AMERICAN CONTINENTAL FRONTIER
LOS ANGELES AIRWAYS PAN AMERICAN
SCANDINAVIAN SOUTHWEST
TWA UNITED WESTERN

BENDIX WEATHER RADAR TRANSMITTER-RECEIVER NOW ONLY ½ ATR

Here's important weight and space-saving news for airlines and multi-engine business aircraft owners. Now available from Bendix* . . . a new 150-mile range air-borne weather radar TRANSMITTER/RECEIVER weighing only 28.7 pounds and completely housed in a ½-ATR package.

Designated the RDR-1D, this new T/R unit reduces total system equipment weight to approximately 91 pounds, using 22″ or 30″ antennas. And it is electrically interchangeable with present full ATR units.

For further information, write Bendix Radio Division, Aviation Electronic Products, Baltimore 4, Md. West Coast: 10500 Magnolia Blvd., North Hollywood, Calif. Export: Bendix International Div., 205 E. 42nd Street, New York 17, N. Y. Canada: Computing Devices of Canada, Ltd., Box 508, Ottawa 4, Ontario, Canada. *TRADEMARK

Bendix Radio Division

Bendix AVIATION CORPORATION

Talk of the town in Atlanta for 16 weeks is a grocery chain's heavy promotion of give-away vacations via Southern Airways, giving airline service top billing.
—(Southern Airways Photo.)

simply this: "Southern sells service — service sells Southern." And like all the locals, Southern has tried and continues to press every imaginable selling method and promotional gimmick.

Take the station managers at cities along the Southern Airways system, for example. These men average some 800 sales calls each month — in addition to their operational duties of selling tickets, taking reservations, loading baggage and the like. All local station managers wear three or four hats and are expert at changing them. They address civic groups, they participate in local fund campaigns, they carry out far-ranging promotional tie-ins. In Atlanta, for example, a grocery chain may be observed giving away 300 — yes, three hundred — all-expense-paid vacations to Panama City, Florida, via Southern Airways. The gimmick here is that Southern thus becomes the talk of the city — for 16 long weeks, with 18 lucky people flying to their vacation on Southern Airways every weekend, compliments of the grocery chain. To find so many people, the grocery chain advertises it widely for 16 weeks, using full-page newspaper ads and 66 radio spot announcements daily — all featuring Southern Airways. Such lush promotions don't just happen — a local carrier like Southern has to sell them and keep them sold.

In cities served by locals, their stewardesses are seen as participants in events wherever crowds gather and pilots talk to student groups in public schools and colleges. Frank Hulse, Southern Airways president, or Casey Britt, vice president of sales, can be found at many a civic meeting or local rally — if they're not the guest speaker they are part of the group. They work all kinds of trade agreements in exchanging transportation for advertising — in local papers, in trade journals, on baseball park signboards — Southern even worked out a tie-in for national advertising in a promotion with Helbros Watches.

Local airline stewardesses participate in many civic campaigns to identify local service with community affairs, as these Southern Airways charmers have done in numerous cerebral palsy telethons.
—(Southern Airways Photo.)

Faster Flights on TTA...

TTA
TRANS-TEXAS AIRWAYS

with the most advanced fleet of its type

TRANS-TEXAS AIRWAYS again pioneers better service . . . with a new "Maximizer" modification that boosts plane speed, increases engine efficiency and achieves smoother flights.

With the completion of the new modification on all TTA planes in mid-year, Trans-Texas will be the first airline to offer these new high-performance features on all flights!

Passengers get the finest service in the Southwest when you schedule connections by Trans-Texas Airways.

SERVING OVER 50 CITIES IN TEXAS, LOUISIANA, ARKANSAS AND TENNESSEE

"Helicopters are easy to fly"

Here's what fixed wing pilots say about the transition to a Bell

Chief pilots and airfleet supervisors often ask us: When a company buys a Bell, does it also have to "buy" a helicopter pilot? The answer, of course, is *no*. Transition from fixed wing to helicopters will be one of the simplest, most satisfying jumps you've ever made . . even easier than learning to fly your first light plane.

Read what Rod Fraser, President of Aircopter Transport, wrote us recently: "I'd had 3400 hours of fixed wing. I soloed a Bell in 5 hours. It's my opinion that fixed wing pilots have an 'air wiseness' that's a great aid to transition. So much of the stuff is similar. One point that particularly stuck with me is — you can get plenty of power-off landing practice in a helicopter course; far more than in fixed wing forced landing procedures."

Or take Chief Pilot S. M. Maxwell of Burlington Industries. He writes: "I soloed the Bell in 8 hours, 10 minutes. After the prescribed Bell training we had our Commercial Helicopter Rating. Since that time we've used our machine in the mountains, on top of buildings, in front yards of plants, under every imaginable landing configuration (at gross limit), and there hasn't been a minute of mental strain."

The folks at Bell would like to tell you a lot more . . about helicopter training generally . . and about the vital place a Bell has in today's airfleet. We'll tell you also about Charter Service, Bell's Lease/Purchase Plan, and about Outright Purchase and upkeep. Just drop us a note, Department 12 F, Fort Worth, Texas. Prompt answer guaranteed!

Watch "WHIRLYBIRDS" on TV . . consult your local paper for time and station.

BELL Helicopter CORPORATION

Fort Worth, Texas

Subsidiary of Bell Aircraft Corporation

Air Force H13J

Bell Helicopters have the longest and most distinguished service record with the U. S. Armed Forces of any helicopter in the world.

Get there FAST in a '58 Beechcraft Bonanza

. . . FIRST with fuel injection

'58 BONANZA'S NEW ENGINE WITH FUEL INJECTION

GO FARTHER—FASTER

The four-place *Beechcraft* Bonanza
RANGE – up to 1,060 miles nonstop
SPEED – up to 210 miles per hour

Tomorrow's power — fuel injection — is yours today in the New Beechcraft Bonanza for '58! For the first time in commercial aviation, the magic of fuel injection gives smoother performance and 200 miles per hour cruising speed with the Bonanza's new 250 horsepower engine.

Now you can go faster, get there earlier, get more done than ever before. And you'll enjoy the supreme quiet and comfort of the Bonanza cabin as you watch the miles hurry by.

The '58 Beechcraft Bonanza is at least 30 miles per hour faster than any other single-engine commercial airplane. This rugged and right airplane uses less fuel than your family car, and no airplane is easier to fly!

Beechcraft

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

For information about the **Bonanza** and the finest leasing and financing plans in aviation, see your Beechcraft distributor or dealer, or write Beech Aircraft Corporation, Wichita 1, Kansas, U. S. A.

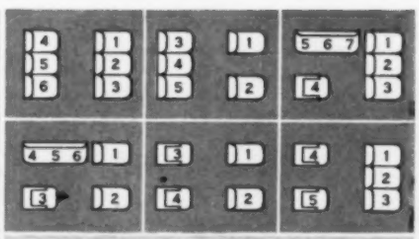
RUGGED AND RIGHT...HIGH STYLED AND HANDSOME

the Beechcraft Twin-Bonanza for '58

You get more of everything in the New Beechcraft Twin-Bonanza for '58 — more power, more speed, more comfort, more beauty, more rugged and right construction — than in any other twin-engine airplane in its field!

With a Twin-Bonanza you save three ways —in time, in money and in energy. From lower maintenance costs to higher resale value, this top performer is not only worth more when you buy it but also worth more while you keep it.

outstanding single-engine performance



your choice of comfort... six luxurious interiors — seating four to seven persons.

The six-place *Beechcraft* Twin-Bonanza
RANGE — up to 1,650 miles nonstop
SPEED — up to 240 miles per hour

Beechcraft

For information about the **Twin-Bonanza** and the finest leasing and financing plans in aviation, see your Beechcraft distributor or dealer, or write Beech Aircraft Corporation, Wichita 1, Kansas, U. S. A.

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

Arizona's Governor, former U.S. Senator Ernest McFarland, boards Apache commuter express at Sky Harbor for business trip to Nogales, Arizona.

Another in a series on commercial aircraft operations . . . why light aircraft, like all major airlines and business fleets, use Champion Spark Plugs. Noted aviation authority reports on APACHE AIRLINES'

Desert Express

by

HERB FISHER

International aviation authority, veteran test pilot, author

● In a land once left to wind, sun and Apaches, the world's longest municipal airstrip shimmers in 120-plus heat. A TWA Constellation lumbers in. A jet bomber, built there, roars off. An American DC-7 disgorges squinting passengers—participants in modern Arizona's expanding wonderland of industrial, mining, resort and agricultural progress.

At Gate 1, Tucson Municipal Airport, three men with brief cases board a tiny, air-conditioned Bonanza, desert-hued in pastel paints. Three businessmen. A doctor, a lawyer, an Indian Chief.

Clock says 2:15.

The world's smallest intra-state certificated scheduled airline rams its "commuter express" down a fraction of the 15,000-ft. runway . . . past bombers, giant airliners, modern factories . . . over the "young-skyscraper" skyline of mushrooming Tucson . . . into the 50-degree "chill" above the 9,000-ft. Santa Catalina Mountains.

Forty minutes from Tucson takeoff, the *Apache Airlines* business commuter drops from sunny skies to Sky Harbor Airport, Phoenix, swank crossroads of a nation. Minutes later, engine hot, Apache wings back toward Tucson—with a senator, a mayor, a rancher.

To the southeast, meanwhile—in the one-time stronghold of Geronimo, Cochise and Satanta—another Bonanza slips through legendary Apache Pass to Sierra Vista and historic Fort Huachuca, bloody frontier outpost and modern-day Army Electronics Proving Grounds. Time from Tucson: 20 minutes. Passengers: A colonel, a scientist, a technician. Freight: The usual items requiring special handling or immediate delivery—plus a delicate bouquet of roses for a G.I.'s lady friend.

Apache swings by new Tucson tower adjacent new municipal airstrip, world's longest. Tucson Airport Authority celebrates Ten Years of Aviation Advancement ($6 million airport improvements) October 18-19 with dedication of complete new airport facilities and base for 152nd Fighter-Interceptor Squadron of Air National Guard. Tucson Airport Authority forecasts for next decade: "Best airport in the West for jets."

At the Mexican border, a third Apache Airlines commuter rises from Nogales International Airport, campsite of Spanish *conquistadores* four centuries ago. Enjoying spectacular scenery from the relaxful cabin are a mining engineer, Mexican envoy and University of Arizona official . . .

Back in Tucson, a wiry Westerner sweats over torn-down engines in one of Tucson Aviation Company's many hangars. Phone jangles. He talks, slips quickly from coveralls into Western business garb, taxis a fourth desert-hued Apache commuter to Gate 1, makes rapid flight preparations. Six businessmen arrive. Then two Beech Bonanzas dart over the mountains on the same scheduled run.

The A&E mechanic piloting the extra section is "Mr. Bonanza" himself—M. L. "Babe" Clements, quiet, soft-spoken owner and president of both Apache Airlines and Tucson Aviation Co., and a state CAA Maintenance Inspector. He's "Mr. Bonanza" in aviation circles because they say he knows more about flying and maintaining Bonanzas than nearly anyone else. Some 7,000 of his nearly 10,000 hours have been in Bonanzas —and many times that number "under-the-hood" in Bonanza engines and airframes.

Herb Fisher

A top mechanic with TWA until 1941, Flight Line Superintendent for Consolidated Vultee during the war, Babe started Tucson Aviation in 1946. Today it is sales and service center for much of the Southwest's light aircraft, and for northern-based aircraft of the Mexican government—maintenance to major overhaul. TA also provides precision flight instruction — classroom and aloft — for businessmen and University ROTC units. TA flies charter and contract missions—Cessnas and Bonanzas under U.S. Forest Service contract, for example. In the remote, pine-covered Catalinas north of Tucson, Babe and his men dropped 4,200 pounds of supplies to firefighters in a single day last summer.

Apache Airlines began just a few months ago as a natural outgrowth of

Apache Airlines moves proudly over ancient Apache trails skirting snow-crowned Santa Rita Mts., rising along Mexican border from famed Saguaro cactus forest. Champion-fired Bonanza has automatic rudder control for rough-air comfort; plush cabin is air-conditioned. Pilot: Babe Clements.

Tucson Aviation—a natural outlet for a man steeped in maintenance . . . a perfectionist, who won't send a plane up with a harmless oil smudge on a cowling; a dynamo, who doubles as pilot or mechanic far into the night, cleans shops or washes planes on Sundays, returns at midnight to personally put brake lining on a plane—and hasn't had a day of vacation in ten years.

Babe's commuter and international airline feeder service now carries over *1,000 persons a month!*—and he's planning route expansion to other cities in the business-booming Grand Canyon State.

Constant engine-straining takeoffs from airstrip elevations as radically varying as *1,100 feet* at Phoenix and nearly *5,000 feet* at Ft. Huachuca . . . continuous, engine-burdening, high-RPM "climbing-out" at drastically different altitudes—26 times daily, every day . . . engines heating to near-maximum temperatures, cooling rapidly, then again heating quickly . . . all this, compounded by other operational detriments such as Mexican fuels and flight infiltration of fine abrasive sand—*that's why "Mr. Bonanza" sweats long hours balancing and perfecting his engines with the very finest products of American engineering.*

"We've had long experience with many kinds of aircraft and their vital components in this grueling proving ground," Babe says. "And you just *can't beat a Beech Bonanza fired to life by Champion Spark Plugs.*"

Babe has obtained CAA authorization for 1,000-hour engine overhauls instead of the usual 800—despite Arizona's wicked extremes of heat, elevation and elements! Champions have been instrumental in making this possible:

"Though I could get 1,000 hours on Champions in Bonanzas easily—I've done it—I actually replace plugs much sooner," Babe says. "My mechanics tell me I'm crazy, 'cause the plugs are still practically good as new. But the point is—that's *how* I get peak engine performance right up to the 1,000-hour major: minimizing wear by keeping vital components new and clean all the time . . . reducing engine load and vibration by balancing . . . requiring my pilots to refrain from the common practice of RPM overloading despite its economy.

"Since an engine's life and reliability depend *so much* on the spark plug, we *must* use only the most dependable plug. Charles Hoefelmann of General Aviation, the Champion distributor here, gives us quick service on the *very best.*"

Spanking this hustling baby airline to maturity in safety and service perfection with Babe are several "old-timers" in aviation: The four regular and two stand-by pilots have a galaxy of experience and professional ratings—CAA-certified A&E mechanics, for example; they have an average flying time of 8,000 hours, an average age of 39, and all are family men with children. Like Babe, they live, eat, sleep, and breathe aviation . . . and are genuinely proud of the dauntless Apache spirit they've ingrained in the character of their modern young airline flying ancient Apache trails.

R.W.F. "Bob" Schmidt, retiring President, American Assn. of Airport Executives, and Manager, Tucson Airport Authority, greets Tucson Mayor Don Hummel, in from business trip via Apache commuter (l/r). Pilot: Charlie Jenkins.

Night maintenance at Tucson Aviation Co. Upper left, Apache commuter comes in with landing lights on.

"Champions in Bonanzas—the perfect combination," Babe Clements (r) tells Tony Orgain, Champion Representative, and Charles Hoefelmann, Champion Distributor (l/r).

Champion Spark Plug Company
Toledo 1, Ohio

NARCO SCORES ANOTHER IMPORTANT BREAKTHROUGH

ALL-CHANNEL

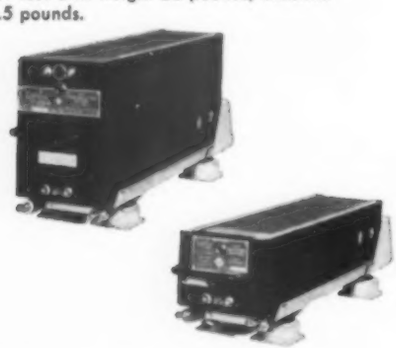
Sapphire

1016A

VHF RECEIVER-TRANSMITTER

with TRANSISTORIZED POWER SUPPLY

SAPPHIRE 1016A IS CAA TSO'd for scheduled airline use. Unitized construction permits rapid disassembly and unusual accessibility for servicing. Panel-mounted control switches provide crystal controlled frequency selection for SCS, DCS, or random cross-channel operation. Provision included for simultaneous channeling of glide slope receiver when used for ILS. Unit weight 22 pounds; antenna 3.5 pounds.



SAPPHIRE 1021 90-560 CHANNEL VHF RECEIVER. The receiver unit of the 1016A is now offered as a separate all-channel receiver with transistorized power supply in a short-height ½ ATR unit. When coupled with VOR/LOC converter, permits rapid, precise crystal controlled tuning to all NAV as well as COMM frequencies. Designed especially for the remarkable "2½ Sapphire" system, that gives unusual NAV/COMM flexibility and rapid switching of functions to relieve cockpit load.

TRANSISTORIZED POWER SUPPLY reduces weight of 1016A by 4 pounds, length by 3½ inches, is nearly twice as efficient as equivalent dynamotor units. With no moving parts, malfunction is virtually eliminated. Thoroughly proved in thousands of hours of flight and accelerated laboratory testing.

MORE POWER, LIGHTER WEIGHT, SMALLER SIZE AND EVEN GREATER RELIABILITY have been engineered into this new Sapphire 1016A VHF communications unit. Thanks to the development by Narco of a revolutionary transistorized power supply, this latest addition to the popular Sapphire series of airline-quality equipment is more than ever the logical choice for airlines and executive aircraft users for an all-channel VHF communications unit.

The Sapphire 1016A provides you with a 90 to 360-channel transmitter with greatly increased power covering every channel with 50 kc spacing between 118 and 135.95 megacycles; and a 90 to 560-channel receiver covering every frequency from 108 to 135.95 megacycles, with the all-important advantage of permitting crystal controlled tuning to VOR/LOC navigation frequencies.

Sapphire 1016 series equipment is in scheduled airline use, has been re-specified for the U. S. Air Force's Cessna L-27's and is in use in hundreds of corporate aircraft.

You'll select the Sapphire 1016A because it provides you with all-channel transmission, all-channel reception both NAV and COMM, because it's years ahead in design and reliability, because it's CAA TSO'd for airline use and because it's sensibly priced. See your Narco dealer or write for new brochure.

narco

National Aeronautical Corporation, Fort Washington, Pennsylvania

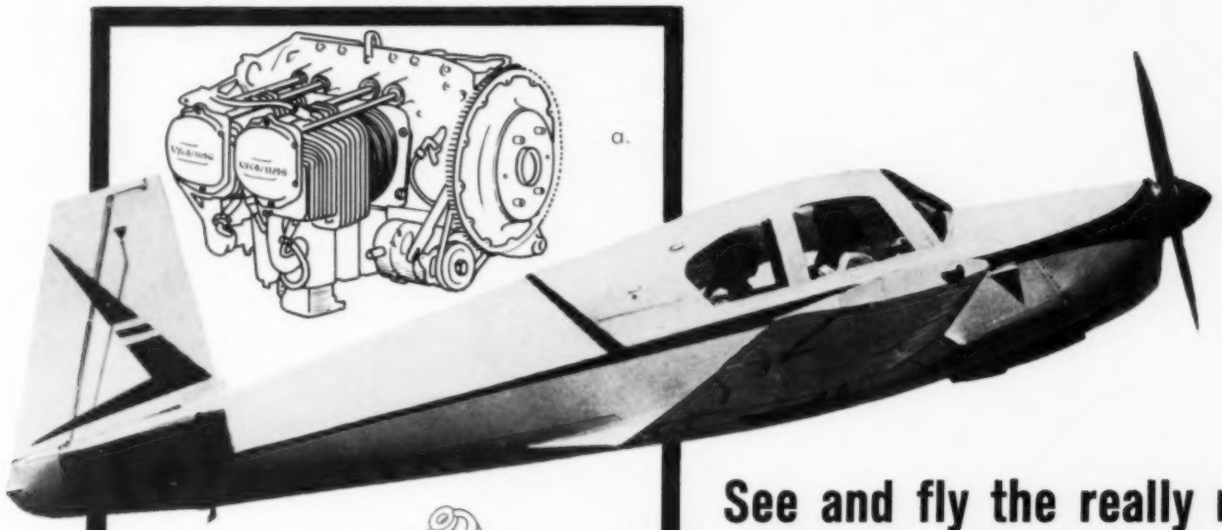
MARK OF THE FINEST COMMUNICATIONS

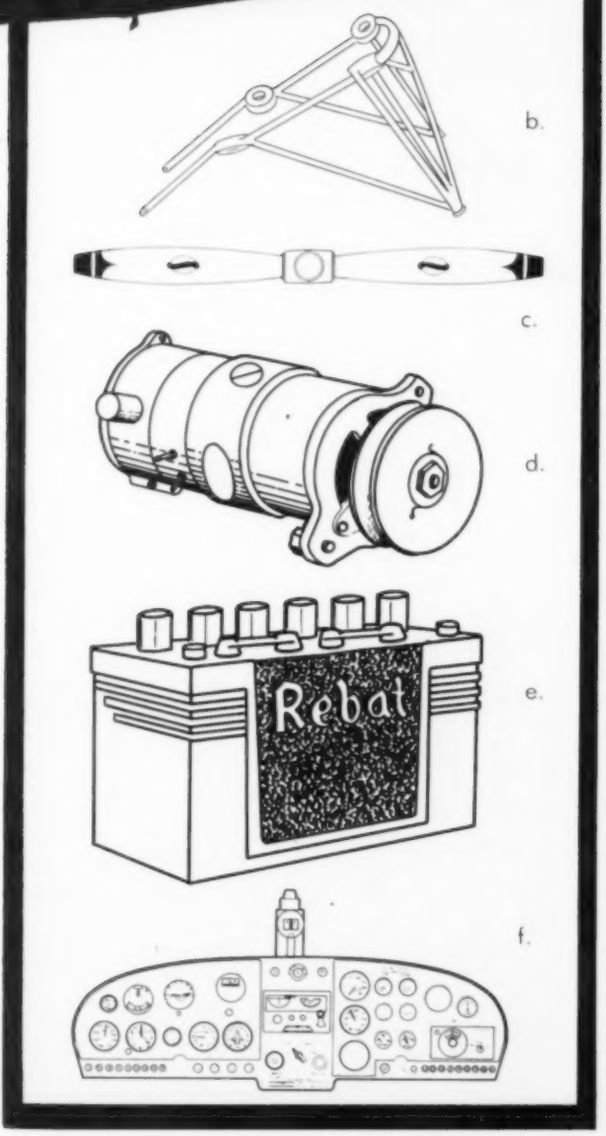
Sapphire 1016A

90/360-CHANNEL TRANSMITTER
90/560-CHANNEL RECEIVER

OUT IN FRONT!

. . . in design . . . in performance . . . in equipment





See and fly the really new MOONEY MARK 20A

. . . the result of advanced engineering combined with superior features and quality standard equipment.

Features engineered into EVERY Mooney Mark 20A make it the most exciting, sweetest performing 4-place plane on the market today. Compare EVERYTHING . . . detail for detail and discover the many advantages of flying a Mooney Mark 20A. Standard equipment includes:

a. 180 h.p. high compression Lycoming engine . . . uses less gas per h.p. hour.

b. Dynafocal engine mount means smoother engine operation, less vibration, longer engine life and a more comfortable ride.

c. McCauley propeller for greater smoothness of operation.

d. 35 amp generator for today's electronic accessories.

e. 33 amp battery to provide extra current for electrical loads.

f. Shock-mounted instrument panel . . . designed for easy, accurate reading plus beauty and utility.

When you see and fly the Mooney Mark 20A, be prepared to want one! It's the super companion model of the Mark 20, today's economy champion.

Write today for the name of your distributor.

MOONEY AIRCRAFT, INC.

KERRVILLE, TEXAS

El Paso Natural Gas Company's fleet of seven air partment uses the former American Airlines terminal

More Planes, Fewer Men

By JIM GREENWOOD
Photos by JIM YARNELL

HATS off to El Paso Natural Gas Company for its realistic approach to corporate flying! If ever there was an outstanding example of effective application and utilization of business aircraft, the flight record of this progressive, 30-year-old organization would be hard to beat. Personnel travel in its 11 planes gives the company a bonus of nearly 50,000 productive man-hours per year for advantages more than offsetting flying costs.

El Paso Natural Gas is one of America's leading suppliers to public utilities and industrial markets. Additionally, it produces a wide range of petroleum and petrochemical products, such as gasoline, butane, propane, butadiene and styrene. With plants, pipelines and facilities sprinkled all over the western half of the U. S., with home offices in El Paso, Texas, and general offices in such major cities as Houston, Salt Lake and New York, its air fleet is literally saving thousands of hours of precious time each year.

Backed by 12 years of experience, El Paso Natural's well-equipped, smooth-running aviation department serves the parent company, subsidiaries and affiliates in a manner unique by most operational standards. At present 11 planes — nine Beechcraft Twin-Bonanzas, one Bonanza and a Lockheed Lodestar — each average over 60 flight hours per month and combined fly an annual fleet total of more than 3,600,000 passenger miles — or put another way, 10,000 passenger miles a day.

El Paso Natural's planes cover an area from Louisiana to California and from the Mexican border to northern Alberta and British Columbia in Canada. Since the firm's operations are throughout the western part of the

Pumping stations along El Paso Natural's pipe lines have air strips. Company planes are used for transportation all over the western half of the United States, from Mexico and well into Canada.

Seven airplanes includes nine Beechcraft Twin-Bonanzas, five of which are shown above on the company's ramp. Its aviation department terminal (left) at El Paso International Airport. Its planes average 60 hours of flying a month each, for a fleet total of nearly 8,000 hours annually.

United States, much of the flying is done over the rugged Rocky Mountain region.

One thing that sets El Paso Natural's aviation department apart from many companies is the fact it doesn't evaluate its fleet operation by the old rule-of-thumb — hourly operating costs. Secondly, it doesn't pretend to compete with airlines when routes and schedules overlap; rather, its planes operate "in liaison" with available commercial air transportation.

That's the philosophy under which the El Paso Natural Gas flight department has functioned since 1946 when it started out with one Stinson Voyager and one pilot, A. M. (Swede) Johnsen, a six-foot-three white-thatched South Dakotan turned Texan, who manages all company-wide aviation activities. You might say El Paso Natural took to the air as the result of an astute Swede's direct mail campaign.

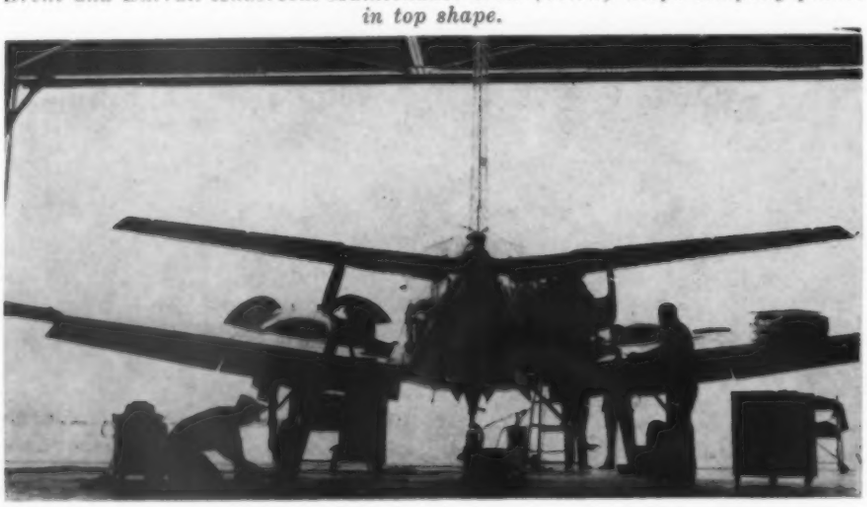
Personable Swede Johnsen was originally employed by the company as a pipeline construction worker. He learned to fly in 1940 and during World War II he instructed Army cadets, later flew "The Hump" into China for the Air Transport Command. Between flights Swede penned persuasive letters to his former employer, in which he enumerated manifold benefits of company aircraft

Twin-Bonanzas are part of the scenery around El Paso Natural stations all over the West. Below are Guadalupe Station Superintendent and Pilot Harry McCall. Company has found Twin-Bonanza to be excellent mountain airplane.

A. M. (Swede) Johnsen (above) directs El Paso Natural's aviation activities and Bill Rogers (below) is head of the aviation overhaul and maintenance facility.

Entering an El Paso Natural Twin-Bonanza, left to right, are Ben Howell, attorney, and C. L. Perkins, vice president, with Pilot Roy Brooks on wing and Aviation Manager Swede Johnsen at right.

Mrs. Dorothy Robinson keeps track of aircraft scheduling (left) in the company aviation lounge. In the engine workshop, left to right, are Lee Ratliff, Don Brent and Burrall Anderson. Maintenance crew (below) keeps company planes in top shape.



ownership. These letters, backing up data from many other sources, helped convince management.

El Paso Natural Gas then employed less than 400 people, compared to its current strength of 6,000. Initially, flight operations were confined largely to Texas, New Mexico and Arizona. As the company began to grow, transportation requirements curved upward. New planes were added, a couple of Beechcraft Bonanzas, a Beechcraft Model D18S, and in 1950, the Lodestar. The Model 18, incidentally, racked up some 5,000 hours before it stepped aside in favor of newer equipment.

"Soon we were flying greater distances over mountainous terrain," said Swede. "And as demands for extra mobility increased, it became desirable to convert to twin-engine aircraft entirely for most operations."

Twin-Bonanza for Mountains

Needed was a new "twin" tailored to El Paso's specialized type of flying, one that combined comfort and speed with structural soundness and economy of operation. Maneuverability and handling qualities were other prime requisites, for El Paso does a heap of flying in and out of small airstrips situated at altitudes as high as 7,000 feet. Johnsen selected the 200-mph. Twin-Bonanza.

"For one thing, it was already performance-proved — the Army gave it a good working out in Korea," said Swede. "It's rugged, roomy and ready to go."

To keep all planes "ready to go," Johnsen three years ago set up his own aircraft and engine overhaul facility in the company hangar adjacent to aviation department administrative offices, which occupy the former American Airlines terminal building on El Paso International Airport. More recently he added a $13,000 radio repair shop to perform all major and minor electronics work, from the complex installation in the Lodestar right down to tube replacements.

Before Swede cracked the maintenance barrier, it required a round trip of 1,200 miles each time El Paso sent a plane to Dallas for an engine change, modification, radio repair or other

major work. This procedure tied up a ship three or more weeks a year. Because each of El Paso's 11 planes logs 15 hours a week, the annual fleet loss due to engine changes and radio maintenance alone amounted to at least 495 hours, exclusive of ferry time.

Johnsen points out that economies resulting from reduction in "down time" more than offset any costs of maintaining full-fledged aircraft and engine overhaul facilities. Skilled El Paso mechanics change both Twin-Bonanza engines in less than a day. By maintaining radios in peak condition, El Paso can complete trips that otherwise would have been canceled by weather and the remoteness of parts and repairmen. There's also the additional safety feature of flying with communications and navigation systems that are constantly maintained.

What really pleases Johnsen is the high quality of workmanship being turned out by his maintenance team, members of which have an average experience level of 15 years in aircraft and engine mechanics. Each 100-hour inspection is actually the equivalent of an "annual" or 1,000-hour periodic. Plans are now in the mill for the erection of a new hangar 120 by 140 feet (with a 40- by 140-foot lean-to) to house all shops and offices.

Johnsen, who still flies a lot himself ("I've had one Easter Sunday at home in 12 years") heads a staff of 11 pilots — Tommy Love (chief pilot), Don Cornwell, Harry McCall, John Howard, Roy Brooks, Owen Ladd, Jim Crigler, Bob Logue, Bob Madsen, Paul Bibens and Don Ice; seven mechanics — Bill Rogers (maintenance chief), Lee Ratliff, Don Brent, Ken Bourland, Tom Gilley, Burrall Anderson and Tom Gruver (in charge of radio), and two secretaries, Mrs. Dorothy Robinson and Mrs. Ethel Haley.

While several planes are assigned to subsidiary and affiliate companies, the entire fleet falls under central control of the parent firm's aviation department. El Paso Natural Gas bases five Twin-Bonanzas (two of them operated by El Paso Natural Gas Products Company, a subsidiary) and the Lodestar at El Paso. Another Twin-Bonanza is based at Farmington, N. M., the single-engine Bonanza at Jal, N. M. Three more Twin-Bonanzas are operated out of Salt Lake City, Houston and Dallas by Rare Metals Corporation of America, another subsidiary, and affiliates Western Natural Gas Company and Tekoil Corporation, respectively.

Business Benefits Measure Flying's Value

"The true picture of the benefits of private aircraft operations cannot be determined by a study of direct and indirect costs," said Swede. "Rather, one must keep in mind the tremendous benefits which accrue. For example, a single survey flight once proved to engineers that a proposed pipeline right-of-way could be shortened by seven miles and thus save the company $350,000, which in those days would have paid for one year's operation of my entire department."

In the El Paso concept, time saved is the only realistic yardstick with which to measure profit in company-owned aircraft operation.

"Top-drawer executive talent, engineers, geologists and other professional men generally cost double their salaries, all things considered, such as secretarial expense and office rentals," an El Paso official told us. "Because a man in transit between two points cannot render decisions or direct action, travel time is non-productive time. Unless we can conserve time and energy, we must either employ more people or do less business."

A case in point involved a typical trip from company headquarters to Tulsa, Dallas, Houston and back in one day. At each city the flying executives held conferences and reached agreements on matters of vital importance. Contracts relative to the future supply and sale of gas were signed, problems of finance resolved and machinery for additional expansion was set in motion. In accomplishing these transactions, time was paramount.

"This one day's operation of one plane resulted in a much accelerated growth," the official continued. "The benefit to our company can be measured in terms of hundreds of thousands of dollars."

Dorothy Robinson, attractive wife of an American Airlines customer service supervisor, handles all flight scheduling for El Paso Natural Gas. A combination traffic manager, dispatcher and secretary, she is primarily responsible for designating the most effective means of transportation. "Airline service is often just as convenient and faster for one person. On the other hand, several persons traveling together can frequently be taken to their destination more economically in a company plane," she said. Thus, El Paso's flight operations work on a priority system, according to accessibility of the destination, nature and duration of the trip, number of employes going, and availability of airline reservations and connections.

Subsidiary companies, too, are reaping rich benefits from their respective air operations. Rare Metals, an El Paso subsidiary formed in 1954 to find, test and produce valuable minerals, regularly flies its Twin-Bonanza over some of the roughest country in the nation. Having its headquarters in Salt Lake, this firm's exploration program alone last year included investigation and testing of mineral properties in eight western states. "The Twin-Bonanza meets our requirements for mountain flying because of its excellent single-engine performance," said Swede.

A trip from Salt Lake to Tuba City, Ariz., site of a Rare Metals uranium processing plant, takes a day's hard drive by auto. To fly there commercial, you are routed via Farmington and Gallup, N. M. — plus intermediate stops — and end up at Flagstaff, Ariz., still with 75 miles of driving to do. The company plane makes it in 105 minutes. And a trip to the subsidiary's mercury mine at Redding, Calif., is less than three hours by Twin-Bonanza, nearly two days by car, and over 10 hours by airline — via Sacramento or Oakland and a change.

Planes Equal 100-120 Additional Men

Daily operation of El Paso's fleet has intensified the effectiveness of key personnel to such an extent that the planes have actually eliminated the need for an additional 100 or 120 top men. Many flights are to compressor stations in isolated areas along some 15,000 miles of main and branch transmission pipe, gathering and field lines. Most of these stations — and there are 98 at present — have their own dirt strips, each over 3,000 feet long and 100 feet wide.

While providing fast, dependable, flexible air transportation is the fleet's primary mission, its planes frequently rush a badly needed part or piece of machinery to an outlying facility, thus averting a possible shutdown somewhere on the system. And though pipelines are normally patroled by jeep and truck, in emergencies — such as flash floods — planes are used to pinpoint washouts.

The saving of time in reaching remote places dotting the El Paso system is even more graphically illustrated by this comparison: Each ship carries an average of two passengers. (El Paso Natural Gas men, incidentally, average 200 pounds per man!) Based on 60 flying hours, two men will spend a total of 120 manhours per month in transit. To cover the same distance by automobile would require four times as much time or 480 hours. In other words, each plane enables El Paso to realize 4,320 or more productive manhours every year for an annual fleet

(Continued on page 116)

North American Aviation's UTX Sabreliner was rolled out last month but awaits delivery of General Electric J-85 engines in July for first flights. It will seat 4 to 8 passengers, cruise over 500 mph. and have a 1,200-nautical-mile range. By it above is F-100 fighter. —(North American Aviation Photo.)

Twin-Jet Sabreliner

IT was designed and built according to U. S. Air Force specifications and requirements in a UTX (for utility jet trainer) design competition, but North American Aviation's new Sabreliner also has the appearances of just what the ideal jet business airplane ought to be.

Its 575-mph. top speed, its pressurized-air-conditioned cabin comforts, its 15,330-lb. gross weight and 8,153-lb. empty weight, its 16-ft. long cabin for 4 to 8 passenger seats, its range of 1,200 nautical miles, its power plant installation and its total of over 4,000 lbs. of thrust for a ratio of less than 4 lbs. of weight per pound of thrust — all these give the Sabreliner

Sabreliner's door sill is only 50 ins. above ground. Note F-86-type droop-slat wing leading edge and glass-fiber radome and antenna housing in dorsal and vertical fins. —(North American Aviation Photo.)

Sabreliner

Basic Data

No. Seats	6-10
Gr. Wt., lbs.	15,330
Empty Wt., lbs.	8,153
Useful Ld., lbs.	7,187
Fuel Cap., gals.	850
Top Spd., mph.	575

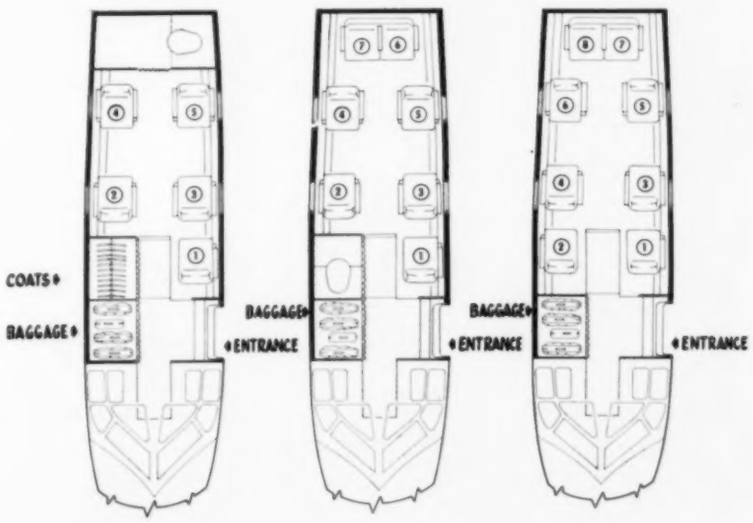
Range, n.m.	Hrs.	Alt. (ft.)
1,200	2.8	41,000

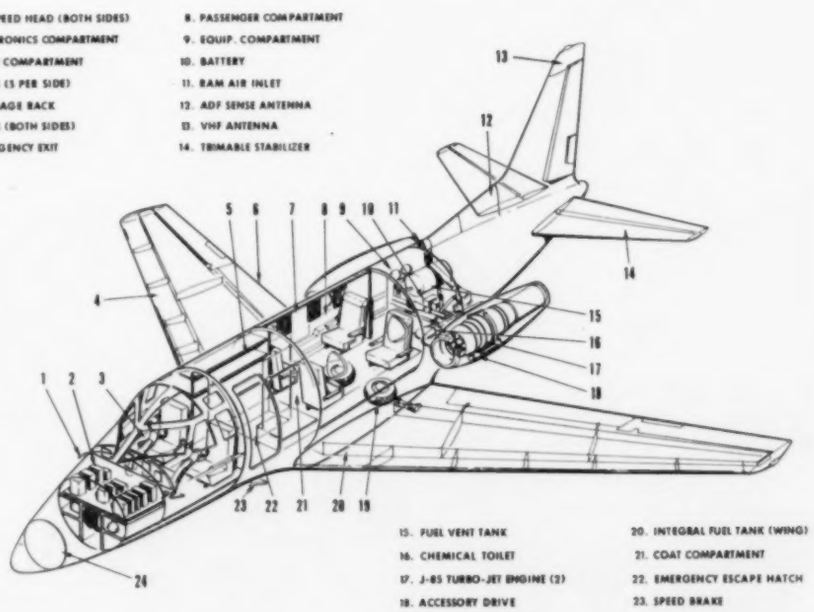
(Note: Range is with 6 occupants, baggage, fuel reserve for 30-min. loiter at 20,000 ft. and 5% reserve on landing; take-off and landing pattern included in range.)

Single-engine Clng., ft.	23,000
Span, ft.	42.4
Length, ft.	43.7
Height, ft.	16.4
Wing Area, sq. ft.	344

Cabin interior for miniature jetliner shows emergency exit open at left. Diagram below shows alternate seating arrangements and cutaway exposes numerous features. Sabreliner passenger compartment is 16 ft. long. Cabin is pressurized for 8,000-ft. comfort while flying above 40,000 ft.

—(North American Aviation Photo and Sketches.)





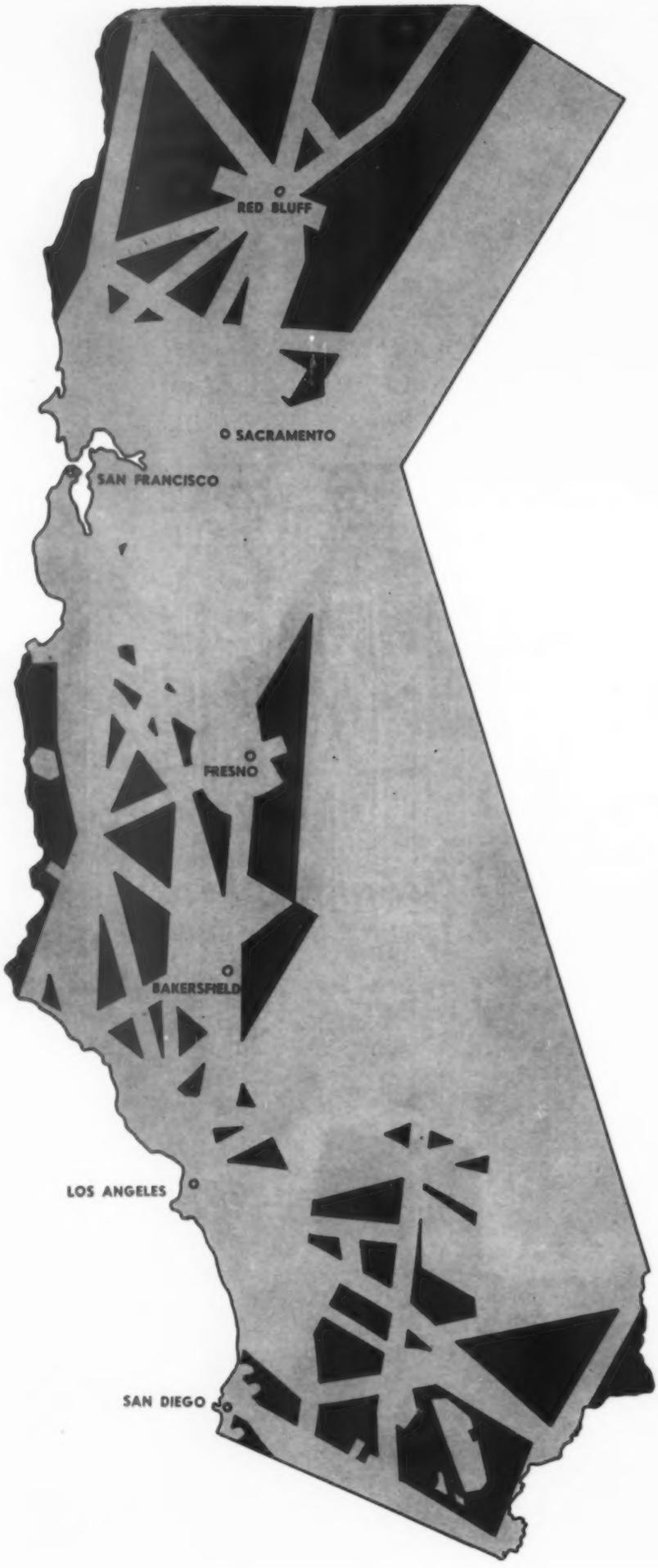
just about the rosiest dream package imaginable to hundreds of business pilots now operating 9,000-lb., 900-hp., 200-mph. piston-powered twins and other piston planes in categories both under and above those figures.

Nothing has been mentioned about cost by North American, which will not produce the Sabreliner without a military order. But if the military does order it into production and if civilian versions do become available, costs should be considerably less than have been quoted for at least one modern multi-jet 10-12-place design also competing for military orders — the Lockheed Jetstar, for which one million dollars has been mentioned as the most probable total cost in round numbers. The Jetstar will gross almost twice as much in weight and will have exactly twice the engine costs. Whether this comparison means the half-as-big-half-as-powerful North American UTX should cost only half a million is something in the realm of wild guessing until North American hangs out a price tag.

However, first cost is not the only major factor — operating cost is also of prime importance and on this point North American has issued a significant statement. The Sabreliner, says North American, can be operated for one-third the cost per nautical mile of such prop-driven twin-engine aircraft as the C-47 transport or B-25 bomber. Business operators with DC-3's and converted B-25's or other aircraft of like operating costs can start figuring from there and come up with some interesting comparisons.

North American built the UTX at its own expense. It was rolled out last month ahead of schedule and is now awaiting delivery of its two J-85 engines from General Electric. They are expected late in July and the first

(Continued on page 115)



Our Loss Of Free Air Space

HERE'S a chart prepared by the California Aeronautics Commission showing the bits and pieces of free air space left in California. By free air space is meant all space that has no restrictions whatsoever. Only in totally free air space is it legal under Part 60 of the Civil Air Regulations to make any violent change in altitude such as required in flight training.

The non-free space includes prohibited areas, danger areas, restricted areas, ADIZ areas and official Federal airways.

Already 32% of the State's airspace comes under the military restrictions. This space now comprises some 76,000,000 acres and is being added to at a rate of 30,000 acres per month.

The solution, says the Commission, is reconstitution of Regional Air Space Sub-Committees of the Air Coordinating Committee. The recent appointment of the Administrator of Civil Aeronautics Administration as air space "czar" puts him in a position of being plaintiff, defendant, judge and jury in any controversial air space issue. Air Space committees and subcommittees are predominantly military and they vote as a bloc, which results in military domination of all recommendations made to the Administrator. Consequently general aviation must call for reconstitution of the committees since it has no voting voice or "friend in court."

There is no known instance of an unused restricted air space ever being released or returned into the common "kitty." Once it is taken it may be traded by various military establishments but is never returned to free air space.

What is the air space situation in your state?

California's only remaining free air spaces are the small solid black bits and pieces accurately scaled on this map. As represented by the gray shading, most of the state's air space has been rendered non-free by prohibited areas, danger areas, restricted areas, ADIZ areas and Federal airways.

—(Map by California Aeronautics Commission Engineers.)

New 250-hp. Lycoming does not change appearance of the popular Piper Comanche, which has top speed of 190 and will cruise at 181 mph. on 75% power at a 2,800-lb. gross weight. Note laminar-flow section indicated by wing tip shape.

Comanche 250 Cruises At 180

IT'S extra performance people want so Piper Aircraft Corporation has started delivering a new "250" version of its popular 4-place, low-wing, retractable-gear Comanche, powered by a new 6-cylinder Lycoming O-540-AIA direct-drive engine rated at 250 hp. at 2,575 rpm. for both maximum and continuous power.

With the added horsepower, the 250 tops 190, cruises at 181 mph. on 75% power, climbs 1,400 ft. per min., has a 60-gal. standard fuel capacity for 4.3 hrs. of range at 75% power or 7.5 hrs. of range at reduced power to cover 1,100 miles nonstop, and has a full 1,200-lb. useful load at a new gross weight of 2,800 lbs. How these figures compare to the 180-hp. Comanche is detailed in the accompanying table.

The 250 is available in three versions, a Standard at $17,900; a Custom at $19,650 which includes an advanced instrument panel, vacuum pump drive and pump, and 12-channel Narco Superhomer for radio reception and broadcast and omni-navigation plus a low frequency receiver with separate power supply; and a Super Custom at $21,500, which substitutes a deluxe 27-channel Narco Omnigator Mark II for the radio in the Custom and also includes a Lear ADF-12E

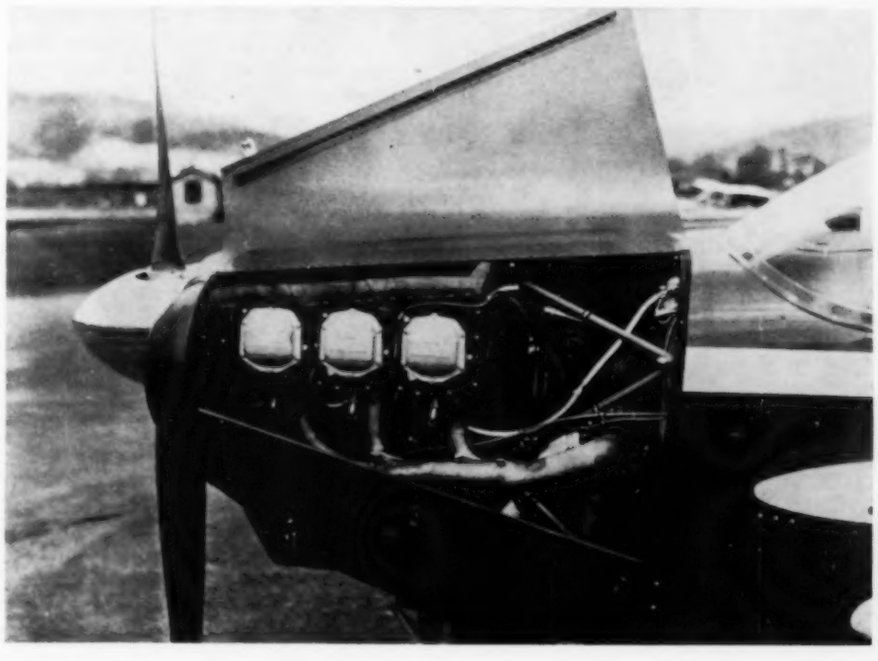
(Continued on page 116)

Comanche 250 and Comanche 180 Compared

Factory Data

	Comanche 250	Comanche 180
Standard Model, price	$ 17,900	$ 14,500
Power, maximum and continuous, hp.-rpm.	250-2,575	180-2,700
Gross Wt., lbs.	2,800	2,550
Empty Wt., lbs.	1,600	1,475
Useful Load, lbs.	1,200	1,075
Fuel Cap., gals.	60	50
Top Spd., mph.	190	167
Optimum Cr. Spd., 75% hp., mph.	181	160
Fuel Consumption, 75% hp., gph.	14	10
Optimum Cr. Range, 60 gals., miles hrs.	1,100-7.5	1,100-7.5
Stall Spd., landing with flaps, mph.	64	58
Landing Roll, ft.	650	600
Take off Run, ft.	750	750
Rate of Climb, fpm.	1,400	910
Service Ceiling, ft.	20,000	18,500
Abs. Ceiling, ft.	22,000	21,000
Wing Span, ft.	36	36
Length, ft.	24.9	24.7
Height, ft.	7.3	7.3
Wing Area, sq. ft.	178	178
Power Loading, lbs.-hp.	11.2	14.2
Wing Loading, lbs.-sq. ft.	15.7	14.3
Baggage Capacity, lbs.	200	100

NOTE: Performance is for gross weight at sea level unless noted. Performance for 250 is based on Super Custom with VHF antennas, ADF housing and rotating beacon.



Close-up shows plenty of room under the cowl for the 250-hp. Lycoming, a 6-cylinder, direct-drive engine which weighs only 396 lbs. dry. It uses 91/96-octane fuel and consumes 14 gals. hourly at 75% power.
—(Piper Photo.)

Tip tanks give new Model D Navion conversion distinctive appearance and provide fuel for range in excess of 1,500 miles. Engine is new 240-hp. Continental. Conversion is performed at Galveston, Texas, by the Navion Division of Tusco Corp. of Houston.

Tusco Navion Conversion

A new Model D conversion program for the popular Navion has been developed by the Tusco Corporation of Houston, which acquired manufacturing rights, tools, components and engineering some years ago from Ryan Aeronautical Company after it ceased Navion production in 1951. About 1,600 Navions are now flying. Tusco's Navion Division performs the extensive modification program in its plant at Galveston on the Gulf of Mexico, south of Houston.

Leo F. Childs, Navion Division manager, said the Model D conversion program is aimed at modifying existing Navions into "new 185-mph. aircraft comparable or superior to anything in its class or performance range" at considerably less than new plane cost.

Childs lists Model D performance as including 175-mph. cruising speed at 75% hp., 1,010-fpm. rate of climb, range of over 1,500 miles and 17,400-ft. service ceiling.

"The Model D Navion is a modernization in which we take any reasonably clean and serviceable Navion, completely disassemble it and build up a new aircraft with full CAA certification and encompassing all the new features we have designed into it," Childs explained. These new features include a new Continental C470-P engine rated at 240 hp. for maximum and continuous operation; McCauley constant-speed propeller, 34-gal. tip tanks, drag-minimizing wing-to-fuselage fairings, flush windshield and canopy windows, concealed aileron counterbalance, flush-mounted rear entrance step, outside baggage door, flush wing riveting, new instrument panel and all-new interior.

Outside baggage door (top photo) and new flush-mounted entry step in flap are shown above. Original Navions have wing-leading-edge entry step.

Note flush windshield and canopy windows on Model D Navion below. They replace drag-producing auto-type rubber windshield and window mountings on all Ryan and North American Navions.

why not?

The first airplanes and the first horseless carriages had little to recommend them. In fact, only their owners. And the man in the horseless carriage did just that. He told the people who gathered round him how his wonderful machine worked and how it could change their very lives. But since pilots have never had time for ordinary people, the proud man with the bi-winged beauty simply told them to "stay away from the airplane."

And the people did—and they have ever since. But the sad and urgent thing about it is that today the time is really right, the product is really ready, and there are literally millions of people whose travel needs and interests cry out for an airplane. Yet still the people stay away. Because 30 years ago flying built a fence around itself and has never torn it down. Because for the most part, people who sell airplanes spend their time selling new and better features to people who already own last year's models or competitive makes.

But some day, somebody is going to break that barrier down. Somebody is going to stand up and sell the convenience and the time-savings and the safety and the new world of mobility that the personal airplane can mean to a man in his business and to a man and his family. And when he does he's going to sell a whale of a lot of airplanes.

We don't think the machines themselves will ever do this job. We think it's got to be done by men—and the kind of marketing methods that did put a car in every garage. And we'd like to talk to anyone in the aircraft business who feels the same.

You'll receive a most enthusiastic reply if you call or write Mr. Carl Ally in our Detroit office.

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Service personnel from Cessna dealers everywhere are pictured in a question and answer session during Cessna Aircraft Company's international service clinic last month. Three days of class-work equipped the service men with newest processes and techniques and they were able to air their squawks about equipment in general in this closing assembly session.
—(Cessna Photos.)

Clinic For Better Cessna Service

THERE is a reason why owners of Cessna airplanes are finding better service for their equipment with each year bringing better service facilities, service technicians and accessory service at progressive Cessna dealers everywhere. The reason is that Cessna Aircraft Company has been developing a more-comprehensive-than-ever service organization.

Last month, for example, the Cessna factory conducted a three-day international service meeting in Wichita. It was attended by over 400 service personnel from dealerships throughout the world. It was conducted not only by Cessna experts but by technicians from all of the firms which supply Cessna — experts in everything from paint to propellers and engines and including all of the accessories and equipment which are becoming more important as a necessary part of the airplane with each succeeding year.

"Meeting" is not the right name for such an operation — it was more of a service short-course and clinic for servicing personnel than anything else. These personnel were divided into three classifications — aircraft technicians, radio and electronics, and parts department managers — and separate classes were conducted simultaneously for all of them. Airplanes in the Cessna line were exhibited in the meeting hall and around them were grouped excellent displays by suppliers, who exhibited their latest equipment and in many cases supplied actual demonstrations of service techniques or highly-informative reports detailing latest developments. In addition to the classes and exhibits, service men from dealers had the opportunity of personal interviews with all of the experts to obtain the low-down on problems, fixes, trends and processes.

Engine and accessory companies participating included Continental Motors Corp., Bendix Scintilla, Bendix Products, Borg Warner's Pesco Products, Borg Warner's Marvel Schebler, Champion Spark Plug, AC Spark Plug, J. I. Case and Delco-Remy.

Airframe accessory firms included Scott Aviation, Electric Auto Lite, Federal Ski, Edo, Stewart Warner, U. S. Rubber, Goodyear Tire, Safe Flight, Tactair, Rohm and Haas, Lear, Narco, ARC, Sun-Air, Enmar, Glenn Phares Color Co., Hartzell Propeller, McCauley Propeller, Kaiser Aluminum,, Woodward Governor, Javelin.

(Continued on page 115)

Service literature on the board at left is but a fraction of that offered by Cessna and its many suppliers. Engine and radio displays are pictured below and class work is shown at right during Cessna's international service clinic.
—(Cessna Photo.)

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- Low Power Drain—1/10 amp at quiescense
- One year Guarantee
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THE DON HORN COMPANY
Box 3736, Lamar Station, Memphis, Tennessee

GENERAL AVIATION SUPPLY COMPANY:

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St. Louis, Missouri

Will Rogers Field
Oklahoma City, Oklahoma

Love Field
Dallas, Texas

Sky Harbor Airport
Phoenix. Arizona

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Champ's Aviation, Inc.
Municipal Airport
El Paso and Lubbock, Texas

Clinton Aviation Company
Stapleton Airfield
Denver, Colorado

Cruse Aviation, Inc.
International Airport
and Clover Field Airport
Houston, Texas

Dal-Tex Aviation, Inc.
Highland Park Airport and Love Field
Dallas, Texas

Hair Flying Service
Harding Field
Baton Rouge, Louisiana

Poelman Aircraft Co.
New Orleans Airport
New Orleans, Louisiana

Ragsdale Flying Service
Municipal Airport
Austin, Texas

Kenneth Starnes Aviation Service
Adams Field
Little Rock, Arkansas

Southwestern Skyways, Inc.
Municipal Airport
Santa Fe, New Mexico
and Ogden, Utah

Sunny South Aircraft Service, Inc.
Broward International Airport
Fort Lauderdale, Florida

Walston Aviation, Inc.
Civic Memorial Airport
East Alton, Illinois

Yingling Aircraft, Inc.
Municipal Airport
Wichita, Kansas

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2 You get genuine Cessna parts and factory-trained workmanship.

3 You save money and time and we stand behind every job for your fullest satisfaction.

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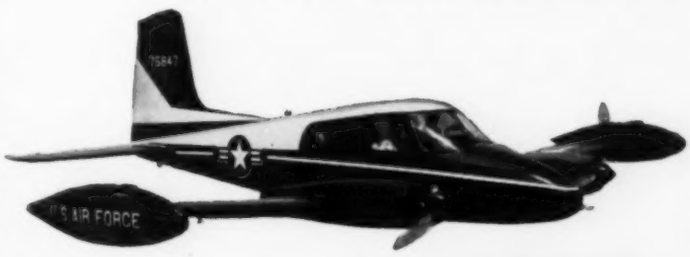
NEW, FASTER CRUISING SPEED

...and faster single-engine climb than any other business twin

Look at the new, higher performance you get from the world's best all-around light twin! Cruising speed: 213 m.p.h., 70% horsepower at 8,000 feet... high-speed power to climb 415 feet per minute on *one* engine while fully loaded with 5 passengers. It's the great new Cessna 310B!

More advanced design is a major reason for the 310B's top performance. Its tip-tanks channel air flow, increase control as well as speed. Its flat engine nacelles are a mere 21 inches high, reduce air resistance, actually add lift. Retractable landing gear and split-type flaps, broad-span tail group, and 69% of weight below and forward of passengers increase speed, stability, safety. Also highly important: the 310B's two performance-proven, 240-h.p. Continental engines. More advanced design shows up again in Cessna's new, quieter, larger interior—the revolutionary "Comfort-Sealed" cabin. Price of the new Cessna 310B: $59,950 f.a.f. Wichita. Call your Cessna dealer (Yellow Pages of phone book) or write CESSNA AIRCRAFT COMPANY, Dept. [illegible], Wichita, Kan. Inquire about Cessna Lease Plans.

**World's Best All-Around Light Twin—Winner of U.S.A.F. Light-Twin Competition*



Cessna

6 GREAT CESSNAS 172 175 180 182 SKYLANE 310 THE COMPLETE AIR FLEET FOR EVERY BUSINESS NEED

FINANCIAL STABILITY

(Continued from page 68)

tion of the views of all interested parties, the Board can develop positive standards that will give the individual carriers and the Board better assurance in advance of the scope of operations that will be underwritten with subsidy and the extent of the subsidy. (Italics added.) It is our hope that the use of such standards will simplify the process of establishing final mail rates and will eliminate many of the uncertainties now inherent in the determination of temporary mail rates."

Surely this Civil Aeronautics Board letter as quoted, in part, supports the affirmative title of this report.

On April 11, 1958, speaking before a quarterly regional meeting of ALTA in Las Vegas, Nevada, the Honorable James R. Durfee, Chairman of the Civil Aeronautics Board, said in part:

"First and foremost, the Board has become increasingly convinced that our present rate-making methods *cannot achieve both financial stability for the carriers and subsidy control for the government.* (Italics added.)

"Our basic objective will be to provide definite subsidy standards, within which the carriers will have to live — within which carriers will have the freedom — and the profit and loss incentive — to conduct their operations as good management judgment dictates.

"By improvements in the rate-making process — by route improvements that we hope to accomplish in the Area Cases — and by other regulatory improvements, *we hope to create an improved atmosphere to complement the developmental steps that the carriers will be taking in the next few months* — the new financing, the introduction of new equipment, the extensions of routes — all the things that promise to make this 20th anniversary year a memorable one for local service carriers." (Italics added.)

In a round table discussion with the five-member Civil Aeronautics Board, ALTA discussed the necessity for improving economic operating characteristics of today's local carrier routes. Presented for the basis of this discussion was the following statement:

"The Association of Local and Territorial Airlines is mindful of the increasing total mail pay bill for the local carriers and joins hands with the members of the Civil Aeronautics Board and its professional staff in divining an affirmative course of action which will increase the opportunity for our local air carrier industry to improve its operating results and to reduce its dependence upon Federal mail pay support.

"The local air carriers' needs cry out for an opportunity to serve on a one-stop or non-stop basis the large cities and markets on their present routes. It is significant to note that the need is now, for the routes now flown and the need will only be seriously compounded by the routes yet to be awarded the carriers if such routes are granted under present route operating authority.

* * *

"In support of this contention ALTA calls attention to the comment on this subject offered by the Comptroller General of the United States in his October, 1955, audit report on the Civil Aeronautics Board to Congress when he said, in part: 'Under their present route structures the local service carriers cannot be expected to achieve financially self-sufficient routes in the foreseeable future.'

"ALTA is preparing a detailed policy statement that it hopes will meet the full support of the Board, the trunkline industry and when accepted unanimously within the local carrier industry will be the keystone in future rapid stepping-stone reductions of subsidy. Examples of individual route segment applications of these proposals are withheld in this presentation as present applicants have similar proposals presently before the Board in pending cases."

The Civil Aeronautics Board members are alert to the situation relating to the financial instability of the local service industry today; the Board's staff are knowledgeable of and applying themselves diligently to the problem; affirmative results are assured.

I believe 1958 will prove a good year for the new local service airline program!

VICKERS VISCOUNT LOCAL SERVICE PROJECT was studied recently by local service airline operators visiting Vickers-Armstrongs in England. Among the American visitors were Laddie Hamilton and Paul Rodgers, Ozark; Pete Howe and R. L. Wageneck, Central; Bob Clifford, Lake Central; Dick Dinning and David Miller, Alegheny; Bill Magill, Southern; Myron Reynolds, Bonanza, and Art Woodley and H. A. Olsen, Pacific Northern.

—(Vickers-Armstrongs Photo.)

DART OVERHAULS

(Continued from page 70)

ing increase cruising speeds from 365 mph. to more than 400 mph.

Deliveries of the Fairchild Friendship are due to start in June, and already orders for 68 of these aircraft have been received. Powered by the 1,600-shp. Mk. 511, they will carry 36 passengers for a maximum stage distance of 1,000 miles at a maximum cruise speed of 280 mph. Later models will incorporate the 1,800-shp. Mk. 528.

The 12-passenger Grumman Gulfstream executive aircraft, which is in prototype stage, is to be fitted with 1,900-shp. Mk. 529 engines, giving a cruising speed of more than 350 mph. and a range with full pay load of 1,700 miles.

The Mk. 541 Dart (which will convert Continental's Viscounts from the 810 to 840 Series) is the most powerful Dart type at present scheduled for service. A version designated the RDa.10, developing 2,660 total equivalent horsepower at take-off, has been developed, but at present there is no announced aircraft application for the engine.

Performance Development

The performance improvement on the Dart has been obtained by:

(1) Increased mass flow.
(2) Increased turbine entry temperature.
(3) Increased turbine efficiency, including introduction of turbine blade and disc cooling.
(4) Increased compression ratio.
(5) Decreased combustion pressure loss.

This development has been achieved

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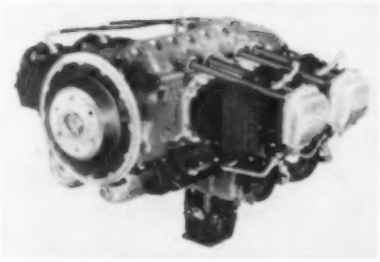
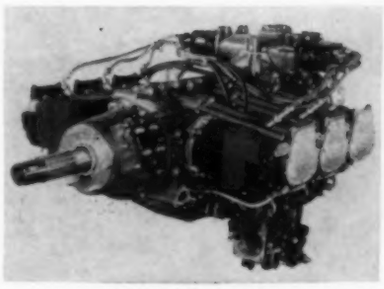
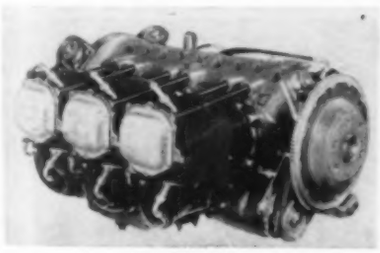


O-360-A1A

Over 30 years ago, Lycoming created its first aircraft engine. Today, more Lycoming engines power modern, advanced executive aircraft than any other engines in the world. And Lycoming supercharged engines, the first available to business aircraft, are carrying today's executives higher and faster than ever.

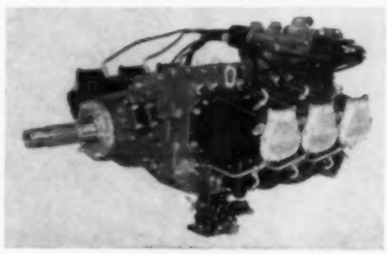


GSO-480-A1A-6



O-540-A1A

Such universal acceptance of Lycoming engines is evidence of the structural integrity and superior performance built into each model. That is why so many aircraft and helicopter manufacturers **look to Lycoming.**



GO-480-D1A

In keeping with the high standards established by LYCOMING, Brown Aero Corp., a factory authorized distributor, provides complete Lycoming service with the largest stock of engines and parts in the Southwest. We make immediate hourly shipments on all orders from our Dallas Lycoming headquarters. The staff of BROWN AERO CORP. is always anxious to be of service to you, and our prompt delivery of your order will mean a real savings in time and money to you.

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without increasing the outside diameter of the engine, although slight increases in length have been necessary to accommodate a three-stage turbine instead of the original two stages and the strengthened reduction gears which have been required to handle the higher powers.

Rolls-Royce of Canada is responsible for all Dart and other Company engines in North America. A substantial stock of spare parts is held at the Montreal plant enabling delivery of all spares in normal usage to be effected within 30 days of receipt of order. A $1-million extension to the plant, including a test bed for propeller-turbine engines, has recently been completed, and Dart overhaul is in progress.

With more than 4 million engine hours in airline service on five continents, the Dart is the most proven propeller-turbine engine in the world.

FAIRCHILD F-27 PROPJET is being delivered to local service airlines including Bonanza Airlines, whose vice president for traffic and sales, William J. Mitchell, is shown at left above with Dick Boutelle (right), Fairchild president, and Jim Pfeiffer, Fairchild customer relations director.

SELECTING THE F-27

(Continued from page 55)

we used the CAA Office of Planning industry traffic growth forecasts which average about 5% increase per year for the next eight years. To this we added a stimulation factor of 25 to 30% for those schedules operated with F-27 equipment. These percentages were arrived at by analysis of experience of other carriers when new equipment was placed into service, competitive considerations, previously experienced traffic growth over our own system by segments and by trips and other factors.

The F-27 will have a 50% increase in seating capacity over our 24-place DC-3's. It will cruise about 100 mph. faster. Accordingly, the increase in productivity per flight hour is substantial, indeed.

At 7¢ per passenger mile, the additional seats will produce 84¢ per mile more revenue than the DC-3. The F-27 per plane mile cost, including the much higher depreciation charges and write-off of heavy training and introduction expense, is forecast to be approximately $1.48 per mile as compared to our present DC-3 costs of $1.12 per mile. Thus, for only 36¢ per mile increase in operating cost we gain 84¢ per mile in earning ability. The difference of 48¢ per mile is substantially greater than our present mail pay.

In summary, we are convinced that carriers whose present load factors are consistently running above 50% must replace their DC-3's with more efficient equipment or else their subsidy requirement will continue to climb at a rapid pace. We firmly believe that the use of the F-27, together with certain route improvements, will place Piedmont in a position whereby it can achieve a subsidy-free status in the early 1960's.

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There's only one kind of service which can give airplane owners what they want—and that's *complete* service. The facilities and personnel of Downtown Airpark are unsurpassed anywhere. Certified A & E mechanics, with the latest equipment and tools at their disposal, handle any maintenance problem, including aircraft repair, and complete engine overhauls. Downtown maintains a large staff of mechanics, and a complete parts department, so that your airplane will be out of service as short a time as possible. Ask for our list of satisfied customers throughout the United States and many foreign countries.

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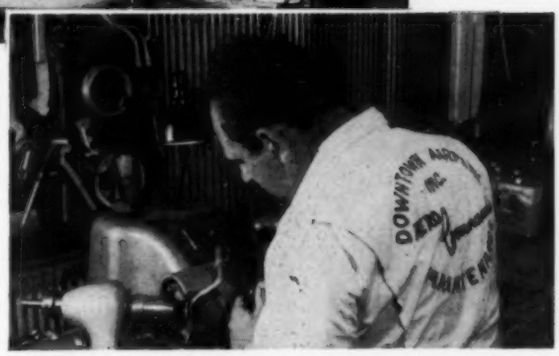

Above, one of Downtown Airpark's certified A & E mechanics at a valve-grinding machine. Each man in the shop is a qualified expert in his particular field of airplane overhaul and repair.

All repair work, such as the aircraft sheet-metal work shown above, is carefully directed by the shop supervisor—assuring the airplane owner the best possible job, with the least possible delay.

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Dozens of Piper Factory-Certified Service Centers have been established throughout the nation and around the world, and more are being designated to assure convenient and competent Piper service wherever you may wish to fly.

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DELAWARE AVIATION CORPORATION
Philadelphia International Airport
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SAratoga 7-6000
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ELLIOTT FLYING SERVICE, INC.
Davenport Municipal Airport
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Davenport, Iowa

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Stewart Air Park
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GArfield 8-3581, *GArfield* 2-7277
Parkersburg, West Virginia

GILLIS FLYING SERVICE
Logan Airport
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Billings, Montana

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MUrray 3-6589
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WAlnut 1-9618
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Oakland's Man With A Plan

LAST November a seasoned executive in a major military manufacturing concern handed in his resignation. When asked why he was leaving he responded, "I'm going into commercial aviation." He was George H. Buchner, now of Oakland, California.

Four months later he had put together an airplane sales and service company. On April 1 this new corporation took over the inventories, shops and offices of Ivar Axelsson's Pacific Aircraft Sales Company on the Oakland International Airport and received the Beech franchise for Northern California and Northern Nevada. During the first week in business the company sold four airplanes.

That's accomplishing a lot in a mighty short time. George H. Buchner was not only a man with a plan but a man with enough faith in the business flying game to put his plan into immediate action.

Here are the principals who joined with Buchner to put the deal over: Joe W. Cochran, III, ex-Marine, president of the Cochran Equipment Company and the Salinas Motor Company of Salinas, California. Cochran is chairman of the board and acting sales manager of Cochran Aviation;

Hugh Shaw, vice president of the Cochran companies in Salinas and vice president of Cochran Aviation;

Mrs. J. W. Cochran, Joe's wife, treasurer and director of Cochran Aviation;

Justin Dart, president of Rexall Drug Company, Los Angeles, a pilot since 1929;

Thomas Davis, Jr., vice president of the Kern County Land Company;

William Dowling, San Francisco attorney, general counsel and secretary of Cochran Aviation;

George Buchner, active pilot with 18 year's experience in aviation, is president and general manager. Ivar Axelsson stays on in a consulting capacity and as a sales representative. All of the directors of the company are active pilots, including Mrs. Cochran.

We attended the company's open house celebration last month with Hook Gaston and Wally Balzerick from the Beech factory. Cochran has completely refurbished and re-equipped the former PAS hangar and offices. We also had a peek at some drawings of future facilities which will be built as soon as the master expansion program of the Oakland International Airport is completed. Oakland is one of the few larger cities in the nation going all out for general aviation. General aviation's requirements rank right along side those of

(Continued on page 116)

Scenes at Cochran Aviation's open house last month at Oakland are shown below. Left to right at the sales desk are the firm's Jack Pemberton, George Buchner, Bob Macfie, Clay Vilas and Joseph Cochran. Famous Ruth Nichols was on hand during her tour for the National Nephrosis Foundation in a Travel Air.

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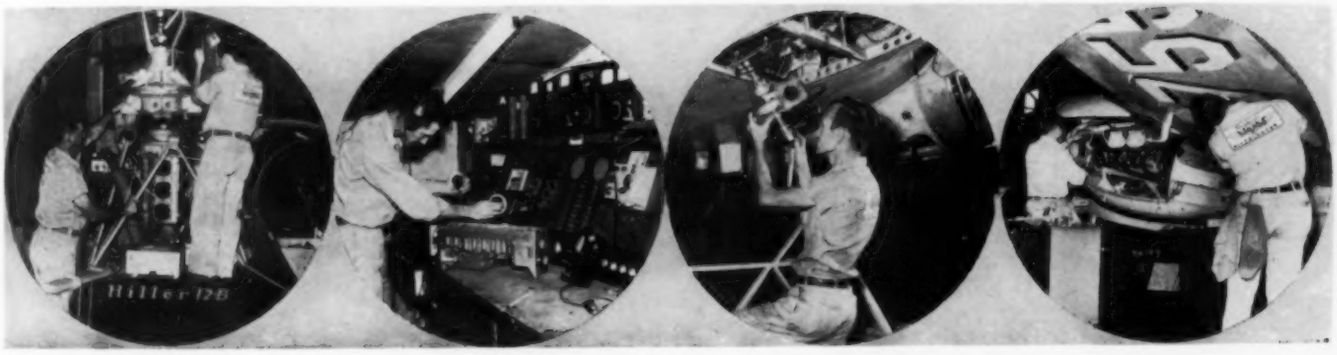
Taking the **guesswork** out of your aviation problem is a specialty of the J. D. Reed Company. Here you will find the job—**big** or **small**—is always done **exactly right** the first time.



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NATIONWIDE ROUNDUP:

New Business In the Hangar

A NEW JUNIOR JATO 250-lb.-thrust solid rocket engine designed for standby use on light airplanes weighing up to 10,000 lbs. has received CAA Aircraft Engine Type Certificate No. 250 and is being marketed by Aerojet-General Corp., Azusa, Calif., through its business aircraft service distributors. Designated as Model No. 15NS-250, the Junior Jato delivers 250 lbs. of thrust, equivalent to about 100 hp., for a duration of 15 seconds. It weighs 42 lbs. (or about 50 lbs. installed including brackets) and measures 26 ins. long with 6-in. diameter. Installed single or in multiples on single-engine and multi-engine lightplanes, it will provide dependable standby thrust available instantly in power plant emergencies. Aircraft manufacturers, not named, are said to be contemplating optional factory installations of the safety devices with several installation designs already in process for existing airplanes.

HORTON & HORTON, Meacham Field, Ft. Worth, has delivered the first two DC-6A conversions of four for Overseas National Airways, with a record time of 49 days for design, engineering and complete fabrication. Special features created and installed included flexible removable seating for 96, 108 and 112 passengers, combination folding hat-rack-air ducts and stressed custom-built baby cribs for long trips. Removable bulkheads give the large pressurized cabin flexibility for various passenger and cargo arrangements. . . . CAA-approved aft bulkhead removal and beef-up provided space for large beverage and snack cabinet in a D-18 conversion for Bob French and associates of Odessa, Texas. . . . A redesigned interior for Fred and Pete Johnson's Summitville Tile Company 520 Aero Commander from Summitville, Ohio, features two full-reclining Burns seats with pull-out leg rests replacing the rear seat; a cantilever-style Formica table and Super Skyhamper seat with ice chest, and a Gold Crest interior with Cardinal red leather seats and sidewalls and 24-K gold kid trim. Headlining is textured off-white vinyl. . . . Others in for custom work included King Sound's Navion from St. Louis, Jack Riley's Riley Twin from Dallas, E. C. Tyson's Bonanza from Laramie and American Home Realty's Aero Commander from Arlington, Texas.

DUPONT AIRPORT at Wilmington, Delaware, will be closed in June with Atlantic Aviation's flight school and operations transferred to larger

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- Logan International Airport
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- International Airport
  Philadelphia, Pennsylvania
- New Castle County Airport
  Wilmington, Delaware

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CURREY SANDERS AIRCRAFT CO., INC.
Downtown Municipal Airport, Shreveport, La.

CUTTER-CARR FLYING SERVICE, INC.
West Mesa Airport, Albuquerque, New Mexico

GRAY AIRCRAFT SVC. CO., INC.
D. A. Cody, Service Manager
Love Field, Dallas, Texas

GREENSBORO-HIGH POINT AIR SERVICE, INC.
Greensboro-High Point Airport
Greensboro, North Carolina

ELLIOTT FLYING SERVICE
Municipal Airport, Davenport, Iowa

THE NORMAN LARSON CO.

PLANESERVICE, INC. (Service Division)
Van Nuys Airport, Van Nuys, Calif.
(Los Angeles Area)

J. D. REED CO., INC.
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ROSCOE TURNER AERONAUTICAL CORP.
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TEXAS AVIATION CORPORATION
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New Municipal Airport
Wichita, Kansas

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facilities at New Castle County Airport. Stewart E. Poole, Atlantic Aviation president, said the move helps provide more efficient and complete service to customers. Du Pont Airport was opened in 1927, became a Waco and Fairchild distributor in 1933 and later, as Atlantic Aviation, became distributor for Beech and Piper. Thus the pioneering operation grew into one of the world's largest business aircraft distributorships, as Atlantic Aviation now employs nearly 400 persons in facilities at 5 stations serving all eastern states from Virginia to Maine. Du Pont Airport was the first night-lighted private field in aviation, among the first to have a control tower, use two-way radio and install a radio navigational aid. It was founded by Henry B. du Pont, who learned to fly in 1923 and still flies his own airplane.

SINCLAIR REFINING CO. maintains detailed records for its fleet of business planes in aviation department headquarters at Tulsa. During March and April, 1958, for example, the records show its airplanes used 171 airports in 36 states, made 1,269 flights which logged 2,094 hrs. and 40 mins. and covered 312,773 miles of company travel. The averages were 246 miles per flight, 1.65 hrs. per flight and 149 mph.

CHAMBERLAIN AVIATION, Akron, Ohio, has issued detailed performance claims for its Cair Pagan conversion on a standard D18S Beech, which had received all Pagan features except engine modification. Its modifications included the Cair nose bowl with pitot-static heads, Hartzell props, low-drag antennas, E-18 wing tips, full-contour tail gear doors and modified stabilizer angle of attack. For the tests, it was loaded to 8,750-lb. gross. After take-off, using 400 hp. from each engine and with improved acceleration noted for shorter but unmeasured take-off, power was reduced to 30 ins. manifold pressure and 2,000 rpm. for climbing at 140 mph. IAS with rate of climb exceeding 1,000 fpm. to 8,000-ft. altitude. At 8,000 ft., the airplane was leveled off and engines cruised at 26 ins. and 1,850 rpm. for less than 270 hp., this setting obtaining a true air speed of 196 mph. as calculated from an air speed system calibrated with a CAA-approved air speed boom. Over a period of time and under various conditions of loading, the true air speed averaged out between 195 and 198 mph. at less than 270 hp. for each engine. During cruise configuration at 8,000 ft., the left engine was feathered and standard cruise power of 270 hp. was maintained on the right engine. Altitude was maintained and the air speed stabilized at 120 IAS. After speed stabilization, METO power (29 ins. and 2,200 rpm.) was applied to the right engine and a normal climb established at 115 mph. IAS. By timing between 8,000 and 9,000 ft., the rate of climb averaged 350 fpm. Chamberlain Aviation says its tests with the airplane indicate that the Pagan's normal climb at gross weight of 8,750 lbs. exceeds the standard D18 by as much as 400 fpm. and that single-engine climb will exceed the standard airplane by as much as 200 fpm. The firm offers its Pagan features as a complete airplane or as a conversion for the customer's aircraft or as a partial conversion. It also makes available its Pagan features in kit form through any qualified aircraft shop.

SOUTHWEST AIRMOTIVE, Love Field, Dallas, has issued a new flat-rate brochure available on request and covering aircraft, engine, propeller and accessory overhaul flat rates for labor on Aero Commanders, Bonanzas, Twin-Bonanzas, Beech 18's, Cessna 310's, Douglas DC-3's and C-47's and Lockheed Lodestars. Some examples are as follows: Aircraft 100-hr. inspections, labor flat rate of $250 for Aero Commanders, $100 for Bonanzas, $225 for Twin-Bonanzas, $300 for Beech 18's, $200 for Cessna 310's, $575 for DC-3, $550 for Lodestar. Engine change, labor flat rate of $200 for Aero Commanders, Bonanzas and Twin-Bonanzas, $225 for Cessna 310's, $300 for Beech 18's and $550 for DC-3 and Lodestar. Engine overhaul, labor flat rate of $500 for Bonanzas, $550 for Lycoming GO-435 and 480, $600 for Lycoming GSO-480, $550 for Cessna 310 (Continental O-470-B or

CESSNA 310 with TACTAIR AUTOPILOT
Now CAA-Approved

The Cessna 310 joins the line of leading business airplanes now approved for installation of the Number One Autopilot on the market today—the Tactair T-3. Weighing less than 8 pounds, the Tactair provides the ultimate in flying ease. VFR or IFR, the Tactair relieves you completely of piloting duties. The Course Selector with Heading Lock lets you "dial" approaches, radar vectors.

So overwhelming is pilot acceptance of the Tactair T-3 that it is now, by far, the most popular automatic pilot for business aircraft. You'll want the Tactair in your Cessna 310 to add that final touch of perfection to your air transportation system. Write today for new illustrated brochure.

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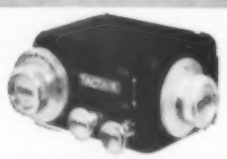

The Tactair T-3 operates pneumatically with no warm-up, no power drain, no tubes—so mechanically simple, yet so "human," that it makes any other flight system obsolete. Weighs only 7.3 pounds. simple to install, virtually maintenance-free.

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Tactair's heading lock works on the DG with no confusing zero heading. Merely set the upper card to course desired and you fly that course precisely. No complicated resetting for new course necessary.

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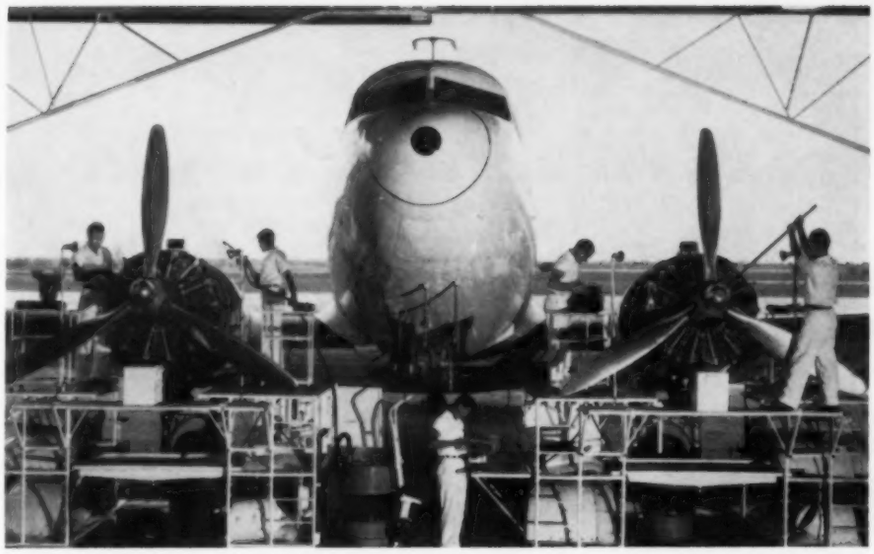
M), $725 for R-985, $1,500 for R-1830-92, $1,575 for R-1830-75, 94, and $1,450 for R-1820.

PIEDMONT AVIATION, Winston-Salem, N. C., reports miscellaneous servicing for Herb Drew's R. J. Reynolds DC-3 and E18S; Ed Haffey's Corps of Engineers DC-3; Management Service's DC-3, flown by J. E. Wilson; E18S's belonging to Krispy Kreme Doughnut, Smith Transfer and McLean Trucking, and Daytona International Speedway's PA-23.

AERO CORPORATION OF ATLANTA, Municipal Airport, Atlanta, performed X-ray inspection on Meynard Bender's Woodward Governor Beech 18 from Rockford, Ill. . . . Fred Westigren was in from LaPorte, Texas, with the W. H. Francis Lodestar for miscellaneous repairs. . . . Aero's heavy military work program continues and a contract was added from Warner-Robbins Air Force Base for propeller component overhaul. . . . Bob Dutton, engine superintendent, has been promoted to be general superintendent.

AIRWORK, Millville, N. J., has quoted prices for its overhauled exchange engines, including chrome-plated cylinders, ignition harness, magnetos, carburetors and spark plugs as follows: GO-435-C2 and GO-435-C2B, $3,050; GO-480-B, $3,230; GO-480-B1C, $3,320, and GO-480-D1, $3,295. These are for similar engine models, with like accessory drives, similar accessories being exchanged and only chrome cylinders exchanged for chrome cylinders without added cost.



REMMERT-WERNER'S FORMULA FOR DC-3 MAINTENANCE EFFICIENCY is this "wrap-around" shop or dock, completely equipped with piped air, hot and cold water, electrical power, tools, parts, materials, lubricants, hydraulic section, degreasers, spark plug service stand and adjustable scaffolding. In other words, mechanics don't have to chase all over a hangar for necessities. Resultant efficiency and time saved makes possible one-day DC-3 100-hr. inspection at $289 flat rate for labor. Remmert-Werner shops at St. Louis, Toledo, Pompano Beach and McBride, Mo., will feature the "wrap-around" deal, perfected after 12 years of DC-3 specialization and over 3,000 DC-3 100-hr. inspections.

EXECUTIVE AIRCRAFT SERVICE, Redbird Airport, Dallas, has delivered International Petroleum's DC-3, up from Bogota, Colombia, with Richard I. Carleton in charge of the work, after performing 1,000-hr. overhaul including landing gear and retractable tail wheel, installation of new radio and flush-mounted Jato,

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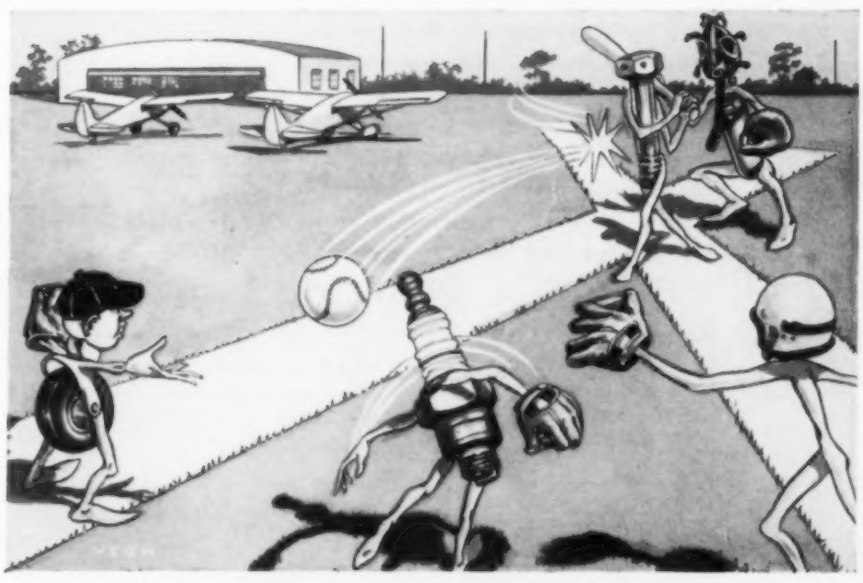

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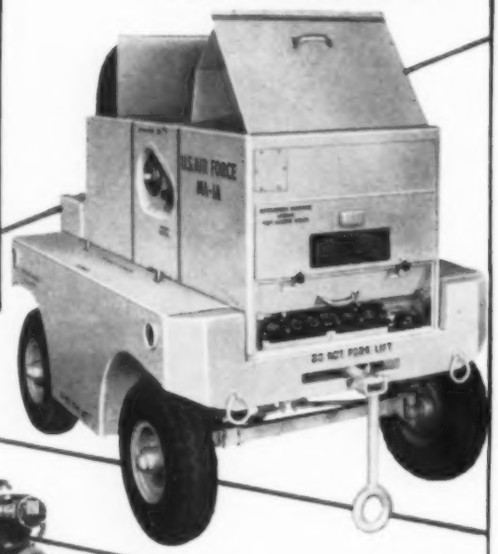

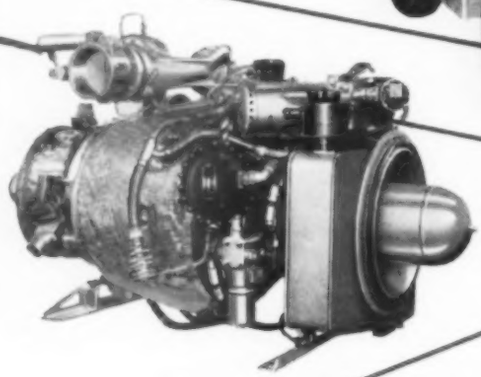

MODEL 141 TURBO-COMPRESSOR ENGINE

Typical of the fine results of Continental development is the TC-106 portable starting unit for large jet aircraft. This advanced new model, with a high performance turbine compressor as its heart, weighs one-third less than its predecessor, yet has 17 per cent higher output, and in addition, other important qualities: greater mobility, less noise, and a completely automatic control system. . . . It is now in volume production at the Continental Aviation and Engineering Toledo plant.

•

C.A.E. gas turbine models—the J69-T-9, the J69-T-2, and the J69-T-19A are being built for Cessna's T-37A twin jet trainer, Temco's TT-1 Navy jet trainer, the Beech jet Mentor trainer, and the Ryan Q-2A Fire Bee target drone.

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and aileron gap closure. . . . Herb Hansen's Atlantic Refining DC-3 is in for 1,000-hr. overhaul, engine change, aileron gap closure, new electric wiring throughout, 200-amp generator system and lowering of the hydraulic panel. . . . Auto Transport's Super Ventura from Oklahoma City, Joe Snelson, chief pilot, was in for radar repairs, as was Buss Finefrock's Sohio Oil Lodestar from Oklahoma City, and Ed Armstrong's Sid W. Richardson DC-3 was in for miscellaneous work.

A NEW SELF-CONTAINED BATTERY-POWERED RECORDER, the Minitape, has been announced by the Stancil-Hoffman Corp., 921 N. Highland Ave., Hollywood, Calif. It weighs 13 lbs. and contains an automatic volume control preamplifier, a recording amplifier and a separate playback amplifier, these amplifiers being on printed-circuit plug-in assemblies. For 50-ohm microphone input, its centrifugally-governed motor and its amplifiers are powered by a nickel cadmium battery, which may be recharged an infinite number of times with a single charge lasting over two hours of continuous recording. It is priced at $494.

THE GARRETT CORPORATION'S AIRESEARCH AVIATION SERVICE DIVISION, Los Angeles International Airport, has Republic Aviation's DC-3 for installation of new radio, executive interior and AVQ-10 radar. Pete Collins is chief pilot. . . . Pratt & Whitney's Convair 340, piloted by Ralph Borden with Walt Pager and Roney Officer on board, was in for AVQ-10 radar system and miscellaneous service items. . . . Tobin Aerial Surveys' DC-3 received radar maintenance and miscellaneous work. . . . Phillips Petroleum's DC-3 was in for interior, radio modification and 8,000-hr. overhaul.

ANTON COMPANY, 15 Bridge Street, New York City, has a new metal polish, "Met-All," perfected in Germany for the purpose of restoring aluminum to a chrome-like brightness. It has no abrasives and contains substantial silicones for a lasting finish.

DALLAS AERO SERVICE, Love Field, Dallas, has installed landing gear doors and aileron gap closure on the DC-3 of Kirk Johnson, Central Airlines chairman. . . . Sinclair Refining's second Lodestar for Dallas Aero Service's Speed-Stability-Safety conversion was brought in by Joe Lacy, chief pilot. . . . The Firestone Lodestar received an annual inspection. . . . Jeff King brought in Fargo Oil's de Havilland Dove for complete new paint job, modification for 8,800-lb. gross weight, and partial interior. . . . A de Havilland 4-engine Heron light transport was brought in by Bahamas Airways for complete modification conforming to de Havilland bulletins. . . . Three-blade props have been installed on Fred Clayton's Parker Equipment D18 from Odessa.

. . . Jack Holman's Tex-Kan Oil Aero Commander was in for engine change.

PACAERO ENGINEERING CORP., Santa Monica Airport, Santa Monica, California, has delivered one of Bechtel Corporation's Lodestars with rudder spring tab system. . . . Ross Bennett brought in one of Sangamo Electric's Learstars for annual inspection and relicense. . . . Utah Construction's Learstar was flown in by Doug Garneau for service.

REMMERT-WERNER, Lambert Field, St. Louis, has installed three-blade Hartzell props on E. B. Brown's Gaylord Container D18S during a 1,000-hr. inspection and overhaul, double engine change and overhaul of wings and gas tanks. . . . Extra outer wing fuel tanks were installed in the S. M. Scaife DC-3, Jim Leonard and Ralph Rathgeber, pilots. . . . One of Ralph Piper's Monsanto Chemical DC-3's was in for double engine change and another of his DC-3's had a new Collins 17L-51X transceiver installation. . . . Engine work included that performed for Rick Ravitts' Trostel Leather E18S and Carl Siemer's Trailmobile Lodestar. . . . Gus Rahm took his Schenley Industries DC-3 to Pompano Beach for one of the first one-day 100-hr. inspections in R-W's new wrap-around shop, and Robert Brown had the National Laboratories D18S in the R-W shop at Toledo for an engine change.

Airmen's Calendar

June 24-26—31st Meeting, Aviation Distributors and Manufacturers Association, Mt. Washington Hotel, Bretton Woods, N. H.

June 30-July 1—Industry Missile and Space Age Conference, Hotel Statler, Detroit.

July 4-6—All-American Aviation Exposition and National History of Flight, featuring antique and home-built aircraft, with Pioneer Airmen's banquet July 5, Pittsburgh-Connellsville, Pa. Details from All-American Aviation Exposition, 210 Semple St., Pittsburgh, Pa.

July 5-6—$5,000 Air Race, Fulton, N. Y.

July 8-11—Institute of Aeronautical Sciences National Summer Meeting, Ambassador Hotel, Los Angeles.

July 18-20—2nd Annual Dallas Jaycee Air Fair, Dallas-Garland Airport, Dallas.

July 24-25—Association of Local and Territorial Airlines Quarterly Meeting, Denver, Colo.

July 27—4th International Air Show, Bellingham, Wash.

Aug. 7-9—National Convention, OX5 Club of America, Hotel Statler, Los Angeles; Jimmie Mattern, Chairman.

Aug. 11-14—13th Annual Flying Farmers National Convention, New Yorker Hotel, New York.

Aug. 23-24—4th Annual Portland Jaycee Air Fair, Portland, Ore.

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1957. TT A & E: 631 hrs.; P & W R-985-AN-14B; Ham. Std. Hydromatic Props. Interior — seating plan No. 2, brown & tan, leather in pleats. Exterior — paint design "D", wheat, stripe and leading edges brown; white top and red pinstripe. Dual thermos & cup disp.; de-icer equipment; airline type clearance lights; two small grimes rotating navigation lights; deluxe SAE Instrument Panel; anti-icer equipment; super soundproofing; refreshment cabinet; 100 Amp generators; eyebrow lights; windshield wipers; two cabin tables (walnut); Geisse Safety Gear; wing fuel tanks; custom paint. Wilcox 701 ADF; ARC 5-21 Transmitter; Wilcox 702A Marker Beacon; ARC R-11A Range Receiver; Wilcox 440-C Transceiver; ARC CD-1 Course Director; ARC 15D Omni (two each); ARC 16706 combined OBS and Cross Pointer (two each) Wilcox 700B Glideslope.

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1957 Traffic Record at Local Service Stops

(Continued from page 76)

Rank 1957	Rank 1956	City and State	Carrier	Passengers Boarded 1957	Passengers Boarded 1956	Percent Change 1956/57	Passengers Boarded Per Departure
359	....	Watertown, S. D. (1)	NO	512	.....	.....	.65
360	331	*Wolf Point, Mont.	FL	506	684	—27	1.02
361	339	*Chehalis, Wash. (5)	WC	492	587	—17	.81
362	353	*McAlester, Okla.	CN	474	417	13	.83
363	354	*Morehead City, N. C. (3)	PI	453	396	14	5.08
364	....	*Palmdale, Calif. (1)(5)	PC	450	.....	.....	1.73
365	345	*Hawthorne, Nev.	BL	439	508	—14	.83
366	....	Brookings, S. D. (1)	NO	415	.....	.....	.60
367	329	Pittsfield, Mass.	MO	409	706	—43	.79
368	355	*Helena, Ark. (5)	TT	382	359	6	.58
369	334	College Station, Texas	TT	303	661	—55	.46
370	362	*Georgetown, Md. (3)	AL	287	194	47	1.86
371	338	*Clifton, Ariz. (5)	FL	276	599	—54	.67
372	359	*McCall, Idaho (3)	WC	248	230	7	1.78
373	356	*Brady, Texas	TT	241	318	—25	.37
374	357	*Gary, Ind. (2)	LC	218	307	—29	.52
375	....	*Lamar, Colo. (1)	CN	167	.....	.....	.47
376	361	*Stuttgart, Ark.	TT	155	202	—24	.23
377	313	Cairo, Ill. (2)	OZ	131	888	.....	.59
378	363	*Coleman, Texas (2)	TT	127	180	—30	.28
379	358	*Woodward, Okla. (2)	CN	19	239	.....	.39
380	....	*Yankton, S. D. (1)	NO	4	.....	.....	4.00

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CESSNA CLINIC

(Continued from page 96)

Garwin, Hanlon-Wilson, Rebat and others.

Ozzie Kangas, service manager, said Cessna expects to handle over $2,000,000 worth of spare parts volume for 1958, as compared to $1,767,000 for 1957. Guest of honor at the clinic was a West Virginia theatre manager, Joseph S. Joseph, who is flying his eighth Cessna since 1949, a new Skylane.—T. A.

SABRELINER

(Continued from page 91)

flight will probably be made about 30 days later, or about the first week in September.

These are lightweight jet engines, indeed, weighing only 325 lbs. each and will probably be rated at over 2,000 lbs. of thrust each. They are mounted on the fuselage behind and above the wing trailing edge and behind the passenger cabin. Thus the wing is kept clean, the wing protects engine air intakes from ramp and runway debris, engine noise is rearward from the cabin and close coupling minimizes engine-out control forces.

Cabin pressurization provides for a passenger altitude of only 8,000 ft. at an airplane altitude up to 45,000 ft. Its air-stair door is located ahead of the wing just behind the cockpit and baggage space is provided opposite the door. From the forward cabin bulkhead behind the cockpit to the rear bulkhead behind the rear 2-place seat in the 8-passenger configuration, cabin length measures a total of 16 ft. There is an emergency exit in the right cabin wall near the rearmost seats and a bail-out exit in the floor between the cockpit and the cabin, this emergency exit opening up behind the airplane's aerodynamic speed brake so that it serves as a wind deflector for bail-out in military flying. With removable partitions, the interior can be easily changed into numerous configurations including an all-cargo cabin for high-priority types of cargo weighing as much as 2,500 lbs.

Built in conformity with Civil Air Regulations for possible certification, the Sabreliner has a full-vision cockpit with wide windshield and large glass areas for visibility. Windshields are electrically heated for anti-icing and de-fogging and have windshield wipers.

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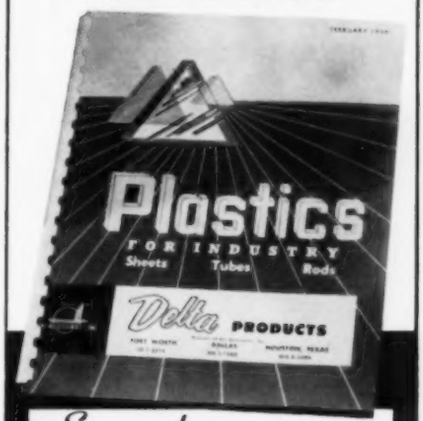

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—(North American Aviation Photo.)

COMANCHE 250

(Continued from page 93)

combined ADF, broadcast receiver, radio range and communications receiver.

The new 250-hp. Lycoming weighs only 396 lbs. dry and drives a constant-speed, controllable-pitch Hartzell propeller as standard equipment. It is installed off-set several degrees to the right of center to counteract torque on take-off, is made exceptionally smooth by the use of dynafocal mounts and uses 91/96-octane fuel.

First delivery of a 250 Comanche was made last month to Alaska. Starting with Serial No. 103, all Comanches coming off the Piper lines at Lock Haven are exactly the same aft of the firewall.

COCHRAN AVIATION

(Continued from page 106)

the airlines in the planning for the future.

Most of PAS's key personnel have been retained in the changeover to Cochran Aviation. Bill Thompson is parts and service representative and administrative assistant to the president. Clarence Bones is parts manager. Both are qualified multi-engine pilots with long experience in approved shop work. Carl Cline, formerly of Salinas Aircraft, also purchased by Cochran, heads up the approved radio shop. The company's approved repair station is the only one in the East Bay area for business aviation.

Three clean-cut full-time salesmen are Jack Pemberton, Clay Vilas and Bob Macfie, all with sales experience in other lines of endeavor prior to adopting aircraft sales as a profession. They round out what definitely is going to be an aggressive airplane sales and servicing outfit headed for success. —G.E.H.

MORE PLANES, FEWER MEN

(Continued from page 89)

total of at least 47,520 manhours. Multiply that by what you consider a top man to be worth on an hourly basis and your result will show a tremendous savings.

Swede Johnsen is a strict adherent of the fundamental formula for suc-

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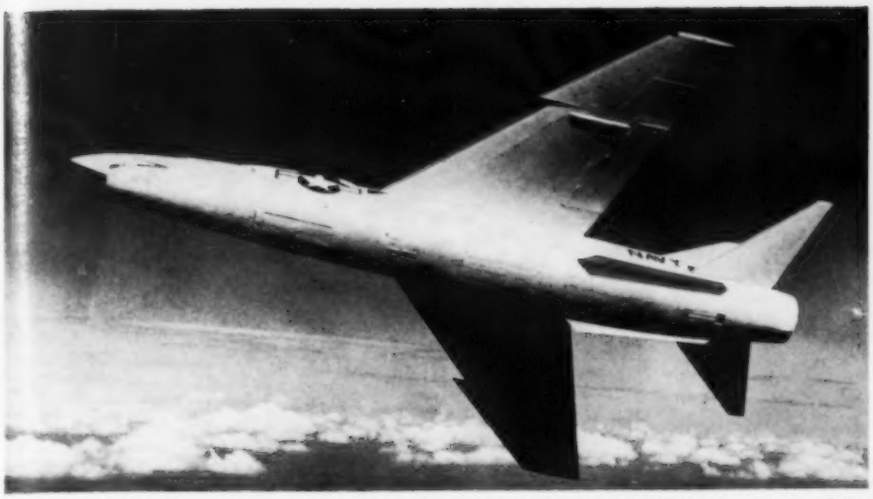

BETTER DIRECTIONAL STABILITY AT HIGH ALTITUDE is achieved by the new Navy F8U-2 Chance Vought Crusader, powered by a new J-57-P16 engine. Note two ventral fins mounted under the tail section. F8U-2 also has two afterburner airscoops on the tail cone between the vertical and horizontal stabilizer. Crusader is world's fastest Navy jet fighter, with speeds exceeding 1,000 mph. —(Chance Vought Photo.)

cessful business aircraft operation — safety, economy and efficiency. But he is quick to emphasize that each factor must be kept in proper perspective. "Too many restrictions on grounds of safety can impair efficiency; likewise, cutting costs in the interest of more economy could jeopardize safety."

El Paso pilots make instrument approaches with no limitations other than CAA requirements and their own good judgment. Besides instrument and commercial ratings, pilot qualifications call for a minimum of 2,000 hours, of which 500 must be in twin-engine aircraft and 100 under actual IFR. (El Paso pilots average 8,000 flying hours.) While each man was a highly competent instrument pilot when hired, all have completed the special course given by C. D. (Tex) Barry's Flight Proficiency Service, Inc., at Meacham Field, Fort Worth, Texas.

"In my book there's no end to instrument training," said Swede. "The other pilots feel the same way. In fact, they all welcomed the opportunity to polish their own techniques under expert supervision and scored some of the highest grades ever reported by Barry."

Workhorses of the El Paso fleet, three of the Twin-Bonanzas are C50 models, six are D50's. All are equipped with identical radio. Swede intends to replace the 275-hp. Lycoming engines in each C50 with 295-hp. Lycomings (which power the D50) as a move toward further standardization. This will result in less inventory, which in turn will mean less cost. He also plans to install an autopilot in every plane to make the pilot's job easier.

Last month El Paso added another ship, a Cessna 180. This aircraft has been modified for exclusive use as an aerial survey plane. Equipped with multiple cameras, the 180 will trim many weeks of laborious, tedious, difficult study and surveying in determining likely right-of-ways for laying pipeline. Aerial photography has already become a big boon to El Paso maintenance and construction crews.

Contrary to all Texas tradition, the folks at El Paso Natural Gas don't boast of their air fleet as being the world's biggest — but they do claim it's among the best. Even a critical out-of-stater would agree with that.

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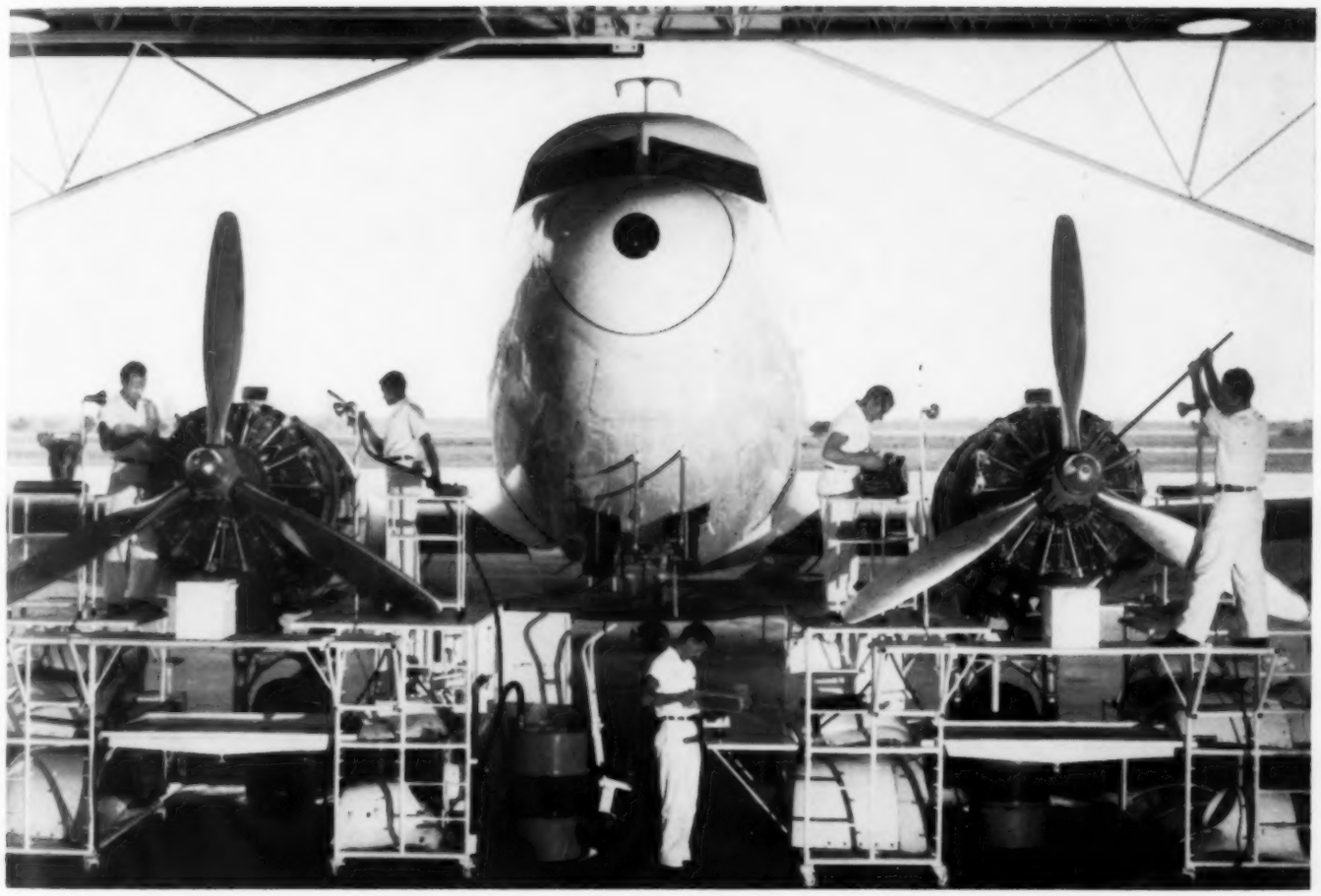

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